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JOURNAL OF EDUCATIONAL RESEARCH

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SUMMARY OF READING INVESTIGATIONS
(July 1, 1933 to June 30, 1934)

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University of Chicago

THIS article presents a brief summary of investigations relating to reading published between July 1, 1933 and June 30, 1934. It continues the series of summaries that appeared in the *Journal of Educational Research* in February, 1933 and April, 1934, and in the *Elementary School Journal* from 1925 to 1932 inclusive. The summary that follows aims merely to acquaint the reader with the major types of studies published and the most significant findings. A study of the content of this article should be followed by a critical reading of the various reports in which the reader finds himself most interested.

A general survey of the studies reported during 1933-34 reveals at least two striking facts. The first is that the chief problems studied during the year relate to reading interests and preferences, to the causes of and remedies for reading disability, and to factors relating to the progress and achievement of pupils. The second is that keen interest has developed in reading problems relating to college students and to adults in general. As will be shown in the discussion that follows the studies reported are concerned with a wide variety of problems at practically every level from the kindergarten to the college.

Reading readiness.—According to Lee, Clark and Lee, (60) the large number of failures in the first grade have made it highly desirable "to be able to predict the probable success of pupils in first-grade reading." They therefore prepared a reading readiness test which according to their data has a reliability of .97 and predicts scores on reading tests "better than did two intelligence tests" and more accurately than did kindergarten teachers through the use of a scale designed for the purpose.

In order to promote reading readiness, Waters (92) studied the types of experiences needed by children to read and understand the content of school readers for use in the first grade, and then endeavored to provide the needed experiences. The steps taken resulted in elimi-

nating many kindergarten activities of questionable value and in emphasizing experiences specially needed by given groups of pupils.

Methods of attacking words in primary reading.—The methods by which pupils attack words have been studied by Wilson (93). She identified the following techniques among twenty second-grade pupils: "intelligent guessing of words from the context or thought"; "met new word—usually slight hesitation—often repeated—inserted or omitted word—changed order—apparently shifting attack to try and get thought"; "appearance—studies word-length, general shape, some one striking clue"; "mechanical analysis." When the number of methods used was compared with achievement in both oral and silent reading, it was found that the pupil who made use of all four methods was superior, on the average, in both types of reading; those who used three, two or one method achieved correspondingly less. These findings support the contention that pupils should be taught various methods of attacking words in efforts to develop accuracy and independence in word recognition.

Size of type in first-grade textbooks.—In 1931, Buckingham (12) presented the results of a study which indicated that second-grade pupils read 12 point type more easily than they read larger sizes. These findings provoked so much discussion that the study has since been carried to the first grade level where 12, 14, 18, and 24 point type were again used. The results indicate that 12 point type has certain advantages. However, the study did not include sustained reading in which the element of fatigue operates; neither did it consider the advantage of the large-sized type in learning to distinguish one word from another, a step of great importance in the first grade. Buckingham's experiment has been vigorously criticized by Tinker (85) who also summarized many other studies relating to the legibility of type.

Relative merits of certain types of work materials in first-grade reading.—Pierce and Quinn (70) compared the value of "work-book" and "picture-dictionary" materials with respect to (a) increasing the pupil's reading vocabulary and (b) convenience in administration by the teacher. The investigators found that the picture-dictionary material required less direction by the teacher than did the work books. As might have been expected each type of material had distinct value. "The reading of directions acquaints the pupils with an important phase of reading, and the following of directions furnishes them with a variety of activities." On the other hand, the picture dictionary ma-

terial "provides effectively for the recognition of words and phrases." It is apparent that when different types of material are under consideration, the most pertinent issue to raise relates to the specific contribution, if any, which each type makes to satisfactory progress in reading.

Relative achievement of rural pupils.—The relatively poor achievement of pupils in rural schools has been emphasized again in studies by Mitchell (64) and by Clem and Hovey (16). The results of both studies indicate that pupils in rural schools are retarded in reading throughout the grades. The inadequacy of the training of teachers was suggested as a contributing cause.

Value of activity programs in promoting reading achievement.—Four studies were reported which were concerned with the value of activity curriculums and integrated programs in promoting growth in reading. Hopkins (49) reported the progress of children in grades II to VIII in Lincoln School, Teachers College. Meriam (63) reported the progress of Mexican children who attended a school which followed an activity curriculum. Howell, Dunn, and Stoker (50) reported the progress of children in the Roosevelt Elementary Demonstration School of Long Beach, California, which followed an integrated program. Collings (18) compared the achievement of the Junior High School pupils at the University of Oklahoma (an activity school) with that of pupils of another junior high school pursuing a subject curriculum. The results in all cases showed that the pupils following the new types of curriculums were doing as well as or a little better than those following traditional curriculums. Final conclusions cannot be drawn from these studies for several reasons: some of the tests used do not measure progress in all phases of reading; the amount of systematic training in reading was not reported; the number of problem cases which developed and the amount of individual help provided were not given. More carefully controlled studies in this general field are greatly needed.

Comprehension.—The mental processes involved in comprehension and interpretation are beginning to receive much needed study. In an investigation involving adult subjects, Pickford (69) secured readings of relatively short passages. He then copied as accurately as possible the statements made by each subject concerning his process of reading. An analysis of the records lead to the conclusion that in reading passages there is a primary tendency toward a synthesis of parts and a secondary tendency to deal separately with parts. The

latter tendency is present normally "and leads to criticism and understanding of the nature of a passage, but it develops fully only when the tendency towards synthesis is stopped." Both tendencies promote a grasp of meaning, which in final analysis is a matter of synthesis.

In an effort to improve the techniques for studying comprehension Dewey (26) devised the individual oral interview procedure, using the Iowa Oral Language Recording Machine as a recording device. The use of this technique makes it possible for an investigator to probe as deeply as he can into a pupil's understanding of what he has read and to secure an exact record of everything that was said.

The need for improved techniques in measuring comprehension was emphasized by the results of a second study by Dewey (25) who compared the consistency of pupils responses on comprehension tests. The findings indicated that the responses of the brighter pupils were consistent only two-thirds of the time. Additional criticisms of reading tests were suggested by Robinson and McCollom (74) who found that rate of reading is of greater significance than accuracy of comprehension in determining achievement scores on the reading tests used.

Rate of reading.—Among the factors which have often been suggested as influencing rate of reading, is speed of association of ideas. Traxler (90) studied the relationship between these two items using five groups of pupils. The relationship, while not marked, "was positive and high enough to be significant." As interpreted by Traxler "there is ground for thinking that slow association rate may be so closely related to the retarded rate of some slow readers that the teacher should not utilize the usual methods to get them to read more rapidly. The problem requires further study with a refined technique."

Robinson (73) reported the results of efforts to improve the rate of reading among college students by increasing the "reading span" (average number of words used at each fixation). The materials used consisted of sentences typed so that phrases were separated more widely than usual. The method employed was based on the assumption that the eyes should stop once on each phrase and then pass on to the next. As the subject improved the length of the phrases was increased. At the end of ten weeks of training the rate of reading of the students had increased 58 percent. An analysis of their eye-movement records also showed distinct improvement. Robinson suggested possible advantages of the use of the same technique earlier in the grades, pointing out, however, the need of validation.

Reading in content fields.—An increasing number of investigators are directing attention each year to reading problems in the content fields. Cowley (20) for example, emphasized again the large vocabulary burden in textbooks by presenting the results of a study of the technical vocabularies for plane and solid geometry. In an effort to determine desirable techniques in developing meanings, Holmes (48) compared the value of incidental and direct vocabulary instruction in fourth-grade history classes. Her findings provide conclusive evidence of the greater value of the latter procedure.

The importance of guidance in reading in the content fields was emphasized in a study by Simon (77) the purpose of which was to determine the value of specific effort to develop desirable reading habits in studying citizenship. His findings led to the conclusion that pupils encounter many difficulties in reading and studying the social sciences. Although the control group made some progress without special training, the results showed that greater progress was attained "when the instructor makes a conscious effort to aid the pupils in the application of desirable reading habits in their study activities." French (35) conducted a controlled experiment to determine the effect of specific training in vocabulary and in the reading of maps, graphs and tables on achievement in geography. The experimental group made consistently greater progress, the training in the reading of maps, graphs and tables producing the greater gains.

The nature and content of reading material.—The nature of available reading material is being studied today both at the child and at the adult level. Thompson (83) examined more than a thousand books written specifically for children during each decade from 1860 to 1930 to determine the extent to which they reflected the change from an agrarian to an industrial civilization. Readers, but not textbooks were included. In general the results showed that there has been a fundamental change in the content and spirit of children's literature since 1860. The religious influence has decreased greatly while folklore and science and industry has increased notably. However, the influence of science and industry on children's literature is insignificant as compared with their influence in social life. If it is reasonable to assume that children's literature should be influenced by such changes, the results to date are disappointing.

The nature of the reading materials for parents in libraries has been studied by Fillmore (32) who secured the coöperation of 41 librarians

in Iowa. "The books most commonly found related to subjects of child management, child study, education, psychology, children's literature, nutrition and feeding, and care and hygiene." The results indicated, however, that libraries could greatly "increase their usefulness to parents by a more careful selection of books and magazines." In view of the increasing interest in parent education, added attention should be given by librarians to this general field. In this connection the fact should be kept clearly in mind that a surprisingly large percentage of adults encounter difficulty in reading the materials that are available, as shown by Ojemann (65) and others. The need is urgent for simple materials relating to the interests of adults.

Factors which influence the difficulty of reading materials.—Rapid progress has been made during recent years in identifying the factors that contribute to the difficulty of reading material. Kramer (56) studied the effect of certain factors in verbal arithmetic problems upon success in solving them at the sixth grade level. "The study indicates that there is probably no one best pattern for the statement of the arithmetic problem. Of the sixteen forms tested, that maintaining the best percentage in the entire test material with the average group of children was the uninteresting, interrogative-complex form without details and in familiar vocabulary." The conclusion in respect to interest is at variance with expectation and the results of related studies.

Two significant studies of the factors that contribute to the difficulty of adult reading material have been reported. Dale and Tyler (22) made a detailed study to determine the factors that influence the difficulty of materials relating to health in the case of adults of limited reading ability. The factors most closely related to difficulty of comprehension were: number of different technical words in the selection; number of large non-technical words in the selection not known by 90 percent of sixth grade pupils; number of prepositional phrases in the selection; number of words in the selection beginning with i. Ojemann (65) found the relation of fourteen factors to the difficulty of material using as subjects parents with somewhat more education than that possessed by Dale and Tyler's subjects. The results showed reasonable high correlation between difficulty and number of prepositions, number of prepositions plus infinitive signs, ratio of total words in dependent clauses to total words in the selection, and mean length of dependent clauses. These studies suggest a variety of problems which should be studied intensively if simple, readable materials are to be provided for adults of limited education.

Influence of reading on spelling and intelligence scores.—The validity of group intelligence test has often been challenged because of the preponderance of items requiring reading ability. Justification for such criticisms was presented by Durrell (28) as a result of a study involving more than a thousand children. His findings showed that intelligence tests often class pupils as dull "who are really normal or bright but who have poor reading ability."

In a study of the effect of reading on spelling in the secondary school, Gilbert (37) (38) found that when pupils "encountered in reading words which they have recently attempted to spell they tend to correct their spellings even though attention is not directed toward that end." Furthermore, the better spellers profit more from this incidental opportunity than do poor spellers. Gilbert concluded that the practice of omitting spelling instruction in high schools is justified only in the case of good spellers. The poor spellers need specific help and guidance.

Reading interests and preferences.—The reading interests, preferences and motives of children and adults are being studied widely both in this country and abroad. Bell (5) found in a study made in Louisville, Kentucky that the interests of white and colored children at the fifth grade level were quite similar in spite of marked differences in reading ability. It was impossible to determine from the report the extent to which this was due primarily to the availability of the same titles. In a study made of children's reading in England (15) it was found that girls about twelve years of age read largely fairy books, school stories, adventure, and Girl Guide stories. "The boy is the much more interested and interesting reader. His interests are much more varied, and he generally knows when he comes to the library what he wants."

In a survey of the leisure time activities of high school pupils Lee (59) found that about 50 percent of the boys and 70 percent of the girls did more or less independent reading. Apparently there is much to be achieved yet in this connection by parent and teachers. Thomas (82) analyzed the voluntary reading of thirty high school pupils during each of four years. The most significant findings related to the general high average of the pupils tastes, and the influence of class activities in determining reading interests. Apparently teachers may do much to direct and elevate reading interests and tastes at the high school level.

The periodical reading of college students was studied by Hunter (51) at the Milwaukee State Teachers College. The findings revealed

a somewhat disappointing situation with respect both to the amount and range of reading reported. Dunlap (27) made a study of the reading interests of colored students and found keen interest in newspapers and magazine reading and wide variations in the number of books read. That the reading interests of white and colored students are somewhat similar was shown by Shores (76) who compared the subject interests and the non-fiction reading of students at Fisk University and the University of Chicago. In a study of the relationship between reading interests and actual reading Carnovsky (13) found that books representing topics of high interest to students were read widely when the titles were well advertised, were readily accessible, "were readable from the standpoint of style, and were written by reputable authors." The value of courses in English that give wide orientation among authors and types of literature and the importance of an inspiring teacher were emphasized by Cockayne (17) who studied the reading tastes and habits of graduates of three institutions.

The wide range of reading purposes and the various types of material read both in this country and in France by different groups of young people and adults are reported by Hathaway (46) Cooper (19) Snyder (79) and Parvillez (67).

Surveys of school libraries.—Wide spread interest in school libraries has been exhibited through surveys of libraries of various types and at different school levels. Space will permit little more than brief reference to them here. Bonev (9) made a study of the aims and techniques of library reading, as determined through an analysis of professional writings, courses of study, and questionnaire responses of classroom teachers. Johnson (52) reported the results of an extended study of the secondary school library as a part of the national survey of secondary education. Lathrop (58) made a careful study of rural school library practices and services. Various contributors to the Twelfth Yearbook of the Department of Elementary School Principals entitled *Elementary School Libraries* (39) presented the results of significant studies of library problems. All these reports recognize the vital importance of the school library and of adequate library materials. They suggest many needed reforms before the library can function effectively in public schools.

Evidence of the specific value of library reading was presented by at least two investigators. Glover (39) reported the rapid increase in reading achievement resulting from wide independent reading along lines of individual interest. Parkhill (66) found that "constant daily

reading of material appropriate to the child's ability" is accompanied by "a marked and unusual increase in reading ability." Of equal significance are the findings of Gould (40) which show that the amount of library reading done is closely related to the reading achievement of pupils.

Children's preferences for pictures and picture books.—Brief reference is made here to two studies which are concerned with children's preferences for pictures and picture books. Freeman and Freeman (34) made a survey of picture books and reported the results of studies concerning the kind of illustrations preferred by nursery children, the picture subjects enjoyed most, and the size of book and arrangement of materials. Mendenhall and Mendenhall (62) studied the influence of familiarity upon children's choices of pictures and poems. The content of both reports is illustrative of the growing body of evidence concerning children's preferences for illustrated books.

Appreciation of literature.—Keen interest has been expressed of late in the factors involved in the appreciation of literature. In a study involving 870 high school pupils Carroll (14) found that there is positive correlation between intellectual capacity and appreciation of literature, "the brighter children possessing much better literary appreciation than the dull." Smith (78) secured judgments from teachers of English and reading in twenty institutions concerning factors involved in acquiring appreciation of literature. Among those listed the following ranked highest: "comprehension of meaning," "ability to correlate the thought of the selection with the learner's past experience and to recognize the familiar." The list as a whole was very suggestive. There is danger, however, that some of the terms may not have been interpreted uniformly by all judges. Furthermore, experimental studies are necessary before the validity of the ranks assigned can be verified.

Reading and study at the college level.—The importance of reading as a fundamental tool in study was emphasized by Broom (11) in a report of the amount of college study that involves silent reading. That college students differ widely in maturity in reading habits and in ability to engage in reading activities was shown clearly by Eurich (30) who secured and analyzed photographic records of eye-movements of successful and unsuccessful students. The differences between these two types of students are distinctly more marked in comprehension than in rate of reading. Deal (23) secured evidence which showed that improvement can be secured in the reading habits of students through the use

of appropriate remedial procedures. As a result of his studies, he concluded that individual diagnosis and assistance are essential and that "group methods are inadequate for problem cases."

In a study of the relative merits of lectures, undirected reading, and guided reading, Greene (45) found on both immediate and delayed tests that the results of guided reading was very superior to those of the lecture method or of unguided reading. Comparisons of the lecture method and of unguided reading procedures showed "that the average student did equally well after either presentation." The good readers, however, did better after their own reading and the poor readers did better after the lecture.

Concerning the relative amount of required and optional reading that is done by students, Gerberich and Jones (36) found that three-fourths of their reading was required and only one-fourth optional. These findings challenge either the validity of the amount and nature of the assignments made in college or the success with which college instruction stimulates intellectual interests.

Diagnostic agencies and procedures.—Because the needs of many poor readers cannot be determined readily through classroom diagnosis, institutions and school systems in increasing numbers are establishing educational clinics. These clinics are rendering very valuable service as shown by the work of Baker and Leland (4) in Detroit, of Betts (6) at Shaker Heights, Ohio, and Witty (94) at Northwestern University. Their findings are illuminating and their conclusions and recommendations very suggestive. As a natural outgrowth of the constructive work going on in such centers, the cause of reading deficiencies are better understood: furthermore new diagnostic and remedial procedures are developing rapidly. In this connection Betts (6) recently devised with technical assistance a series of tests for the detection of visual defects by the classroom teacher. The instrument used for this purpose is called a telibinocular, a modification of the stereoscope. The specific tests used measure "visual super-imposition (fusion of two images into one), visual acuity (keenness of vision), eye-muscle imbalance (horizontal and vertical), stereopsis (depth perception), hyperopia (far sightedness), myopia (near sightedness), astigmatism, and eye regressions." The purpose of these tests is to identify pupils whose reading difficulties may be due to eye defects. As unfavorable symptoms are discovered, pupils are sent to oculists for more thorough examination.

Improving the achievement of poor readers.—The importance of special training for poor readers has been emphasized in several studies.

Bigelow (7) points out the value of individual work with problem cases in the elementary school. Traxler (88,89) demonstrated the value of group corrective teaching in a study carried on in the seventh grade. Broening (10) presented data which indicates the usefulness of tests at the secondary level in identifying poor readers and in determining the kinds of help which they need. Tyler (91) presented data which show that improvement results from special help in reading given to junior college students. The evidence is conclusive that instruction adapted to the needs of the poor reader is productive at all levels.

Various methods are reported in the different studies for securing improvement. They vary all the way from the use of practice exercises, as reported by Farbish (31), to a carefully planned sequence of reading activities, as recommended by Traxler (88). The methods used usually but not always vary with the nature of the deficiencies. As an aid in remedial work among very poor readers Durrell (29) developed a basic vocabulary of 656 words.

In an effort to determine best procedures with subnormal children, Kirk (54) compared the improvement resulting from the use of the tracing method and the conventional "sight" method. Although the results were in favor of the former, the investigator points out that "further research must be conducted to determine whether this conclusion is applicable to all subnormal children, to normal children, or whether the subnormal and the normal differ in these respects."

Relation of cerebral dominance to reading disability.—During recent years the view has often been advanced by Orton and others that there is a causal relationship between cerebral dominance and special disability in reading. The evidence presented and the judgments expressed during the past year do not support this view. Franz and Davis (33) following an experiment involving simultaneous reading with both cerebral hemispheres concluded that "we must alter, or perhaps give up, for visual processes at least, the conception of cerebral dominance as an anatomical or physiological condition." After reviewing several studies relating to this general issue, Crider (21) concluded that more evidence is needed before the theory can be accepted. He also pointed out the following minor objections to it: "In the first place, a physiological theory seems to be over simplification of the problem. The higher mental processes, basic to the reading process, are made subservient to certain physiological conditions. Secondly, this theory has failed to take into consideration the possibility of learning difficulties due to low intelligence, inadequate vis-

ual perception, personality factors, poor methodology, eye-muscle imbalance, and many other factors . . . .'' Furthermore, Dearborn (24) concluded from a study of 476 cases that an account of the etiology of certain reading disabilities in terms of the preponderance of left-eyed cases and of crossed and mixed conditions ''is sounder and more serviceable than accounts which are based on either theories of cerebral localization or on hypotheses such as has been proposed by Orton of dominance of one or the other cerebral hemisphere with interfering mirrored images of the non-dominant hemisphere.''

Relation of handedness and eyedness to reading disability.—Dearborn (24) summarized records of ocular and manual lateral dominance secured from 100 cases of dyslexia and 376 public school children. The data showed, ''first that whereas nearly half the unselected group are sight dominant in both hand and eye, only one fifth of the dyslexia cases are so classified. Secondly, the proportion of left dominant in both hand and eye in the disability group is nearly equal to the right dominant, and that it is six times as great in the disability group as in the unselected group. Thirdly, (and this is the grouping which is, I believe, most significant for the present analysis) all but 19 percent, that is, 81 percent are either left dominant, crossed in dominance, that is, left eyed and right handed, or right eyed and left handed, or of mixed dominance as compared with 51½ percent in the unselected group.''

Kirk (55) gave to a group of 61 high-grade mentally defective children (median I. Q. 67) both ocular and manual preference tests and also normal and mirror-reading tests. ''Contrary to previous experimental results and to theoretical expectation the 31 children in the left-eyed group (largely right-handed) were not superior mirror readers as compared with 30 right-eyed subjects of the same handed classification and of the same reading grade.'' When the results were compared with records secured by Monroe for normal children it was found that the defective children were superior to normal children of the same grade in mirror reading.

The relations of handedness and eyedness to one aspect of reading ability has been studied indirectly by Anderson and Crosland (1) in a series of experiments. They secured ''range of attention scores'' with three nine letter cards presented in a Dodge-mirror Tachistoscope under nine different variable conditions with 60 left-eyed and 60 right-eyed college students, one-half of each group being right handed and one

half left handed. The results showed that in three of the nine conditions there was no difference between the two forms of hand dominance. In the remaining six conditions the advantage was with the left-handed subjects. When the subjects were paired in respect to eyedness (2) the results showed that left-eyed subjects excelled the right-eyed subjects at the right side of an exposure card of nine letters, and that the right-eyed subjects were superior to left-eyed for the left-most letters. However, the superiority of the left-eyed subjects was greater than that of the right-eyed. When the effect of combinations of handedness and eyedness was studied (3) "the superiority of the left-eyed subjects, or of the left-handed subjects, as against his right-eyed, or right-handed, rival" was convincingly and consistently demonstrated. The investigators expressed the belief "that handedness is a weaker and less important factor than eyedness alone and of considerable less consequence than eyedness combined with a similar (symmetrical) form of handedness."

Reversals in reading.—Because of the frequent occurrence of reversals on the part of poor readers, several investigators have made intensive studies of their nature and causes, and of possible methods of elimination. Teegarden (81) measured "the strength of the tendency to reverse and confuse symbols" among beginning first-grade pupils and the relation, if any, between this tendency and subsequent progress in reading. The results of the tests showed a stronger tendency toward reversals among non-kindergarten than among kindergarten children. Correlations between reversal scores and reading achievement showed that the tendency to reverse definitely effects progress in reading. The early identification of reversal cases and appropriate guidance and training were recommended.

The view has often been expressed that reversals occur more frequently among left-handed children than among right-handed. The evidence reported during the year is by no means confirming. Hildreth (47) found that left-handed and right-handed children tend to make about the same number of reversal errors. Phillips (68) found in a study of 136 pairs of matched left-handed and right-handed pupils in grades one to three that the right-handed children made slightly more reversals than the left-handed children. Woody and Phillips (95) concluded on the basis of various types of comparisons "that handedness per se with the two groups under consideration had little or no influence on the type of reading responses made . . . Whether similar results would be obtained with groups of so-called naturally left-handed pupils who

had been trained to be right handed or with groups in which neither left nor right handedness is dominant, only extensive future investigations can determine."

Improvement in reading by an aphasic.—McCullock (61) reported the progress in rate and accuracy of reading in the case of an adult aphasic who had suffered from a nervous disturbance "which left her with right hemiplegia accompanied by aphasia. The records secured indicated that the subject made "rapid and great improvement in reading the standard selection," and a corresponding, but lesser, improvement in reading variant passages. The chief method used consisted of "prompting" the subject when she encountered difficulties or made errors in reading aloud.

The value of tachistoscopic and eye-movement records.—In order to determine the value of the tachistoscope as a measure of reading perception, Robinson (72) compared the average fixation span of 51 college students as determined through eye movement records with the span of perception as measured by the usual type of tachistoscope and by a modified type which allowed the subject "to read a paragraph down to the last line which was then exposed tachistoscopically." The results indicated that "the usual tachistoscopic test is not a very good measure of the average span used in reading nor probably of the limits of its development," but that the modified type used "is a reliably better measure of the reading span."

The use and limitations of eye-movement records of reading have been discussed at length by Tinker (84, 86) and by Tinker and Frandsen (87). A survey of published studies supplied convincing evidence that the photographic method is a fairly common, useful and flexible method of studying reading performance. Many of the pitfalls of interpretation and some of the unconvincing conclusions reported "may be avoided by a more careful consideration of what each photographic measure of reading signifies." In a discussion of the role of eye-movements in diagnostic and remedial reading, Tinker (86) presented evidence which led to the following conclusions: "(1) There is no evidence that training eye movements as such develops effective motor habits which improve reading ability. (2) On the contrary, there are data from many sources which indicate that the nature of oculomotor performance in reading is largely determined by central processes of perception and apprehension. In other words, eye movement patterns do not cause, but merely reflect efficient or poor reading performance."

Evidence secured through the use of synchrostoscope and other devices is somewhat at variance with the first of these conclusions.

Value of campaigns to improve reading instruction.—In a study extending over a period of years, Gray and Whipple (44) made a careful survey of the achievement and needs of pupils and of the content and methods used in teaching reading, studied the findings with teachers and school officers, advised needed changes in methods, equipment and teaching materials, conducted teachers meetings at which methods of improving reading instruction were discussed, directed committees in the study of special problems, and supervised classroom teaching more or less intensively. Objective studies of the progress made by the pupils supplied clear evidence of the value of campaigns to improve teaching through the application of the results of scientific studies of reading. That the improvement made was permanent was shown by the results of tests given one, two and three years after the training period terminated. The study showed also the need for and the value of adequate supervision if instruction is to be maintained at a high level.

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Chicago, No. 4 (Chicago: Department of Education, University of Chicago, 1933), pp. 121-36.
Describes the plan followed in the University High School in providing corrective and remedial training in reading; presents the methods and results of experiments in group corrective training.

89. Traxler, Arthur E. "Group Corrective Reading in the Seventh Grade—An Experiment," *School Review*, XLI (September, 1933), pp. 519-30.
Summarizes a series of studies to determine the value of group corrective teaching among seventh-grade pupils and to develop techniques for correcting reading deficiencies.

90. Traxler, Arther E. "The Relation between Rate of Reading and Speed of Association," *Journal of Educational Psychology*, XXV (May, 1934), pp. 357-65.
Presents the results of a preliminary study involving seventh- and ninth-grade pupils and college students to determine objectively the relationship between rate of reading and speed of association.

91. Tyler, Henry T. "Remedial Reading in the Junior College," *Junior College Journal*, IV (October, 1933), pp. 28-31.
Reports the results of reading tests given to 616 students in the Sacramento Junior College and the improvement which resulted from remedial reading given to a group of 21 students meeting twice a week for one semester.

92. Waters, Doris. "Pre-Reading Experiences," *Education*, LIV (January, 1934), pp. 308-312.
Presents an analysis of the content of fifty primers and first grade readers and the results of tests given to 31 kindergarten children to determine experiences lacking; also describes steps taken in supplying needed experiences.

93. Wilson, Clarn. "A New Study in Primary Reading," *Childhood Education*, X (January, 1934), pp. 195-96.
Compares the achievement of twenty second-grade children in oral and silent reading with the number of techniques employed in attacking new words.

94. Witty, Paul A. "Diagnosis and Remedial Treatment of Reading Difficulties in the Secondary School," *Educational Trends*, III (April, 1934), pp. 7-13. Evanston, Illinois: Northwestern University.
Presents "An analysis of the reading of fifty ninth-grade children who were examined because of 'repeated manifestations of faulty or inappropriate reading habits' ".

95. Woody, Clifford, and Phillips, Albert J. "The Effects of Handedness on Reversals in Reading," *Journal of Educational Research*, XXVII (May, 1934), pp. 651-62.
Reports the results of studies of 136 pairs of right- and left-handed pupils to determine the influence of handedness on reversals in reading.

COMMENTS ON ACHIEVEMENT EXAMINATIONS

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I

Many controversial articles upon examining educational achievement appear in the periodical literature. Some of these articles contain ideas and statements which are confusing, and which involve assumptions the authors would not care to make if they had been attempting a more explicit formulation of the basic concepts.

It seems to us that much discussion bearing on the relative merits of essay and objective tests has been especially obscure. Progress in examination methods is not awaiting any settlement of the question of what form of examination is to be used. As experimentation with various test forms proceeds, and as new forms are created and adapted to specific uses, we may expect some progress in examination methods.

We are here presenting a few definitions and propositions, as an attempt to focus some of the controversy into useful channels. It is not our intention to present these dogmatically, but to propose them merely for the purpose of establishing a tentative logical basis for test construction.

The purpose of achievement examining is essentially measurement for certifying academic credit. An achievement examination may diagnose difficulties, predict future achievement, or motivate students to greater effort, but it need not. An achievement examination is good or valid, if it simply does a good job of measuring what it purports to measure.

An examination is any device for eliciting and evaluating student response. An objective examination is one which may be scored and evaluated by a competent clerk, ignorant of the subject matter covered or sampled. An essay examination is one which must be read by a person competent in the subject matter covered or sampled. It might be insulting to the readers of this journal to point out that "objective tests" and "true-false tests" are not synonymous terms; however, that error is often made.

We shall select a few propositions from a larger number, because they seem to be particularly relevant to specific criticisms we shall make of a certain article on testing.

Proposition I. An achievement examination need not have direct pedagogic value, in itself.

This follows from the definition of an achievement examination as a measuring device. A general principle of measurement is that the measuring device must be independent of the thing measured. It is certainly not proper to demand that an instrument to measure individual achievement shall also motivate and instruct. Occasionally statements are made which imply that the achievement examination must afford the student experience in organizing the material of the whole course of instruction. This puts a heavy burden on a one- to six-hour examination — to repair the deficiencies in a term of instruction.

Proposition II. When (and only when) an educational objective is cast into terms of procedures which involve definite mental operations by the student, measurement of the objective becomes possible.

This means simply that one can examine only the subject matter, techniques, and processes which have been definitely stated. When anyone mentions an objective such as "good citizenship," "ability to organize," "critical insight," one may legitimately demand that he state the concept operationally, that is, describe concretely just what the student is to do about it. The truth is, of course, that this operational procedure is necessary in order to teach it to others; hence, if any "objective" may be taught, it may be tested. Any operation by the student which may be set into motion by the instructional procedure, may be used as a test element. An examination is a sample of test elements constructed in such a fashion as to elicit student response.

It might be argued that we are "throwing out the baby with the bath" when we thus point out what everyone knows, viz., that no concept has any practical usefulness apart from its statement in concrete terms. There is no real limitation on content of examinations that does not exist generally in all educational procedures. We are willing to concede that there may be many elusive values of school instruction not tested for in any achievement examination. Even if wholly true, this consideration is beside the point; no examination or no course of instruction is to be condemned because there are many vague educational objectives already proposed which have not been stated operationally.

Proposition III. The form of a test gives no certain indication of the ability tested.

The use of the term "ability" is here confined to some combination of mental operations which acts as a functional entity, if there are such. We wish to digress enough to point out that psychologists do not know what abilities are involved in procedures such as writing examinations.

The nature of these mental operations had best be left alone when discussing test form. Since the test form is only a superficial aspect of the vehicle used to elicit response from the student, it is impossible to deduce from the form just what type of mental operation is tested. Neglect of this simple consideration is widespread among educators. For instance, some have assumed that essay and objective tests must measure something quite different, since they differ radically in form. It is interesting to note in this connection that there is accumulating evidence that when both essay and objective tests are made more reliable, they tend more to measure the same thing. Test form is revelant, of course, to reliability (precision of measurement), but that is another story.

Proposition IV. The "chance factor" in item response is a negligible source of error in testing.

All claims to the contrary grow out of lack of understanding of the principles of educational measurement. Limiting the number of degrees of freedom of response is always necessary in any examination. This type of error is compensating. Some of the non-compensating sources of error which must receive the serious attention of all test constructors are:

(a) inadequate sampling of the operations to be tested.
(b) ambiguous phrasing of test questions and items.
(c) errors in evaluation such as those shown by inability of two readers to agree or of one reader to agree with himself.

Proposition V. The measurement of affective response (attitude, interest) is not a legitimate part of achievement examinations.

The crucial consideration of achievement examinations as used here is "certification of academic credit." No one can dogmatically postulate (for all the rest of the population) a set of attitudes on controversial issues which must be held by the student before he is certified for academic credit. This is held to, in theory, at least in all secular education. Incautious statements to the contrary may be made by those who have in mind something quite different, really. The steps of operations required in the critical evaluation of a piece of literature, or of a social issue, may be stated concretely and are therefore measurable. The student is rightly held accountable for his techniques, his background of information, and his logic, but his emotional response to the conclusion he reaches is not a proper object of measurement for certification purposes. If the student's critical evaluation (appreciation) is acceptable,

the educator may not deny him credit even if the student's conclusions on social and esthetic issues are diametrically opposed to his own.

II

Mr. August C. Krey in a recent publication[1] considers the problem of the improvement of examinations in the social sciences in a manner somewhat typical of current discussions of the problem. An analysis of his paper in the light of the propositions just formulated may prove worth while.

The title of the publication in which the article appears—*Differential Functions of Examinations*—and the specific title of the paper—"The Improvement of Examinations in the Social Sciences"—and the comments within the paper, all show that Mr. Krey is concerned specifically with achievement examinations used for certification or course credit purposes.

The consideration of measurement for purposes of research, survey, incidental group outcomes of instruction, etc., must be clearly differentiated as an entirely separate one from that of achievement examinations. For example, one may be interested in the change of attitude toward the Bible which takes place in students while they are studying evolution. Yet to demand that the students have a certain attitude toward the Bible in order to pass the achievement examination is not now considered desirable. Possibly achievement examinations are confused with instruments whose use should be confined to other fields.

A

In line with the unquestionably logical procedure recommended by test technicians,[2] Mr. Krey states at the outset of his article that as none of the social science courses has a definite body of material which must be mastered, the value of the studies lies in other directions, which he indicates. Among the essential outcomes of a study of the social sciences which are to be examined for are included (1) points of view, and (2)

[1] Krey, August C., and Johnson, P. O. *Differential Functions of Examinations: "The Improvement of Examinations in Social Sciences,"* Bulletin of the University of Minnesota (Minneapolis: University of Minnesota, 1933), 14 pp.

[2] Mr. P. O. Johnson on page 15 of the bulletin being considered states, "The first step in the building of examinations is a clear understanding of the things to be tested . . . The tendency is to cite objectives in broad abstract, and nebulous terms. Since the objectives logically form the basis for the measurement to be made, they must be brought to earth before construction can begin." See proposition II.

new and enlarged interests.[3] Again in speaking of the six general outcomes of the study of the social sciences (which are to be examined for) are included[4] "enriched imaginative power involved in the development or expression of the individual's interest" and "the modification or development of social attitudes of the individual."

These objectives are stated in what Mr. Johnson, who manifestly agrees with proposition II, would be forced to label "broad, abstract and nebulous terms." Assume that they could be "brought down to earth." What is their significance?

That a study of the social sciences should incidentally bring about a change of attitude and a development of the powers of imagination is to be expected but not demanded. Indeed, can a normal person gain knowledge or skills in any field of learning without undergoing some change of attitude and some enrichment of imagination? But to specify the strength and the direction of the attitude necessary for passing an achievement examination is to venture far afield. Mr. Krey, however, suggests not only that the student have the proper (how determined?) verbal attitudes, but also that his overt behavior be in conformity with his verbal attitudes.[5] In other words, if an objective of the course is to give the student a favorable attitude toward social science (as defined in his course), then the student must not only say that he is in favor of social science, must not only show that he can imagine the Utopia which might be produced by proper application of social science, but he must also actually be so interested that he will go forth and work for the development of social science.[6] Just how long the student must continue his activity in order to pass the examination, Mr. Krey does not suggest. Course credit or any other type of certification would have to be deferred until the measurement could be completed.

Demanding the possession of specific attitudes, interests, and "enriched imaginative powers" for certification in a course is, we believe,

[3] *Op. cit.*, p. 7.

[4] *Ibid.*, p. 9.

[5] *Ibid.*, pp. 11-12.

[6] In a letter, Mr. Krey writes: "I had chiefly in mind the intellectual attitudes such as open-mindedness, the willingness to seek as full information as possible before reaching a conclusion on a matter of importance, and the like. I think that your statement implies that I had in mind a series of specific attitudes of the kind that you illustrate." The same type of argument we have advanced will apply equally well to this position. However, we doubt that there exists a series of general (not specific) intellectual attitudes. Open-mindedness in attacking a problem in molecular theory does not mean the same type of attitude will exist in attacking the divorce problem, or the problem of "God."

introducing a new note in the field of achievement testing, and in the field of higher education. Perhaps the universities of the future will be admittedly propagandizing agencies and will demand before awarding a degree that the student possess "character," "reasoning power," and "imagination and proper interests and attitudes," but this day has not yet arrived. Considerable evidence should be collected before such a program is inaugurated.

The field of the social sciences is not sufficiently developed to specify what attitudes and interests should be encouraged, to say nothing of demanded. Indeed in the fields of attitude and interest, who is to say what is most worth while?

This entire discussion hinges on the truth of the proposition V which states that the measurement of attitudes or interests is not a legitimate part of any examination used for certification purposes. We maintain that the soundness of this proposition cannot legitimately be questioned. What are the interests which should be developed? What are the proper attitudes? What are the right points of view? Certainly the superior student who knows the required facts, methods, procedures, sources, etc., and has developed the required skills and techniques deserves to receive credit in the course even if he be a conservative capitalist or a belligerent communist, even if his interests lie chiefly in the field of writing detective stories or flying airplanes, even if his attitude is that the time he has devoted to his study has been wasted, even if a study of his conduct proves him to be unsocial—in spite of all these things he should be passed in the course.

B

Another "category of values, the ability to discuss a topic in the social sciences clearly, convincingly, and agreeably," according to Mr. Krey[7] "is one which requires the essay-type examination." Few persons will question this statement, as it seems obviously true. Yet proposition III should be considered seriously in this regard. Investigation should be employed to discover how the attainment of this objective can best be measured. Before any investigations are possible a more meaningful definition of "clearly, convincingly, and agreeably" would be necessary. (See proposition II). We have had some experience with attempting to measure the ability to write clearly, and when to that is added "convincingly and agreeably," great doubt is raised in our minds

[7] *Ibid.*, p. 12.

concerning several points, particularly what is meant by the expression and how adequate measures of it can be made. Indeed, the ability to express oneself "clearly, convincingly, and agreeably" in writing or in speaking is a rare one, so rare, in fact, that we doubt that it can be a requirement for course credit. But if this requirement is to be made, the choice of the best test form or forms must depend upon experimental evidence.

"Those outcomes of instruction in the social science subjects more closely connected with emotions such as individual interests, attitudes, and forms of expression are better tested, so far as they can be tested in an examination, by means of the essay-type question. For some of those values the essay type is the *only* satisfactory method of examination, and a comprehensive examination in the social sciences, therefore, must include some essay-type material."[8] If, as proposition III states, the form of a test is no certain indication of the function tested, then this argument is false. What sound evidence can be offered that for some of these values the essay-type is the *only* satisfactory method of examination? A statement that any one objective form of question is the *only* satisfactory form of examination would be equally objectionable and open to the same type of criticism.

"In general, a multiple-choice type of question is to be preferred to a true-false."[9] As pointed out in the discussion of proposition III, such statements about the comparative validity of test forms are worthless and misleading. As has recently been stated:

> . . . For example, certain test technicians recently have been publishing articles dealing with such questions as, "Is the true-false test superior to the multiple-response test?" "Should the true-false or essay type test be used?" It is obvious that these questions cannot be answered in general terms. The real question is how to measure particular objectives, not how to measure student reactions in general.[10]

C

Mr. Krey speaks of certain principles relating to new type questions,[11] although the suggestions and admonitions he offers are not, in our opinion, "principles." The first "principle" relating to the new-type questions is that "great care is necessary to avoid ambiguity in phrase." Certainly

[8] *Ibid.*, pp. 12-13.
[9] *Ibid.*, p. 13.
[10] Tyler, Ralph W. *Service Studies in Higher Education.* Bulletin of the Ohio State University, Bureau of Educational Research Monographs, No. 15 (Columbus, Ohio: Ohio State University, 1934), p. 50.
[11] *Op. cit.*, p. 13.

this suggestion, which applies to all written work, is sound. It applies to both essay and objective questions insofar as they use language.

A second principle is that "care is also necessary to limit the pure chance factor in answering questions."[12] Proposition IV concerns this question. Undoubtedly Mr. Krey was betrayed into using this ambiguous expression "pure chance" by a consideration of the fact that in most (not all) objective test forms there are a small number of responses possible, and that hence the student has a calculable probability of getting an item correct without a knowledge of the proper answer. If Mr. Krey means "pure chance" in a technical sense, then all errors so introduced would perfectly counterbalance one another. If Mr. Krey had in mind other (not chance) factors, such as irrelevant indicators, which produce constant errors, then test constructors would agree in urging that care be taken to rule these out. Perhaps what Mr. Krey means by his statement is that care should be taken to make the examinations reliable. This warning is, of course, sound, and equally true of any type of examination.

Still another "principle" which is given as applying to any new-type test is worded thus: "Care, too, is required to insure the reliability of supposedly equivalent forms of the test." This statement is virtually meaningless! Probably what is meant is that care is required to insure that supposedly equivalent forms are actually equivalent. This difficulty, it should be pointed out, is much greater for essay than for objective tests. The "principle" becomes more obscure than ever when we realize that supposedly equivalent forms are by definition supposedly equally reliable. Care is necessary in the construction of any type of test to insure high reliability.

D

While the violent disagreement we have expressed with the several ideas found in Mr. Krey's eight-page paper may sound acrimonious, we mean them only as straightforward criticism. We remain unconvinced of the soundness of most of his argument, and believe that much of the difficulty in preparing satisfactory social science examinations is caused by such confusion in thinking as we have pointed out. With some of Mr. Krey's words, nonetheless, we are thoroughly in accord. We believe that the construction of adequate examinations in any field is an important and difficult task.

[12] *Ibid.*, p. 13.

A VALID SCIENTIFIC APPRAISAL OF AN ENTERPRISE IN PROGRESSIVE EDUCATION

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SETTING OF THE PROBLEM

To what extent have scientific studies been made in the field of progressive education?[1] Bonser criticized many of the new schools[2] in 1929 when he said ". . . . there has been no record made of what was done, no attempt to evaluate results or to establish alleged achievements of growth by evidence, and little effort to analyze purposes and methods in terms of basic principles."[3]

Workers identified with progressive education have been criticized as unscientific. Although this criticism has come largely from those accustomed to thinking in terms of outcomes of traditional education, the criticism is probably justified.[4] The progressive movement, like all other new and reforming movements, had been passing through a stage of protest, of deviation, and of innovation. That progressive education had passed this initial stage by 1928 was the belief of John Dewey.[5] Shortly thereafter the progressives were cautioned:

> No error could be more costly to the progressive schools than that of assuming that they are in opposition to the use of scientific method or to the findings of valid scientific investigation. While it is true that we have no technique of precise measurement for either the quantities or qualities of growth representing higher and finer values of educative experiences comparable with our techniques for the measurement of the acquired skills and information, we are not thereby released from obligation to analyze and evaluate by every possible means the procedures and products of our endeavors.[6]

Dewey[7] names two major contributions which progressive schools may make to education. One is the development of organized subject

[1] As used throughout this article, 'progressive education' refers to the type of education defined and described by Dewey. See footnote 4.

[2] The terms 'new schools' and 'progressive schools' as used in this article refer to those schools in which learning conditions are similar to those listed under Description of the Experimental Learning Conditions.

[3] Bonser, F. G. "Ten Years of Progress in Elementary Education," *Progressive Education Magazine*, VI (January, February, March, 1929), pp. 15-16.

[4] Dewey, J. "Progressive Education and the Science of Education," *Progressive Education Magazine*, V (July, August, September, 1928), p. 200.

[5] *Ibid.*, p. 198.

[6] Bonser, *op. cit.*, p. 16.

[7] Dewey, *op. cit.*, pp. 203-204.

matter. The other is the study of the conditions favorable to learning. What contributions of these two types have been made? Of the first type, many recent studies have been published. Units of work as actually carried on, have been published by teachers of Lincoln School, Teachers College, Columbia University, and by others. Contributions of the second type, that is, studies of the conditions favorable to learning, are fewer. A number of recent books, such as those written by teachers of Lincoln School, Teachers College, Columbia University, describe conditions of learning and report some of the outcomes, but there is a tendency to omit scientific evidence of controls and conditioning factors.[8]

Regarding the nature of scientific studies needed in this field, Dewey says,

> . . . from the standpoint of progressive education the question of method takes on a new and largely untouched form. It is no longer a question of how the teacher is to instruct or how the pupil is to study. The problem is to find what conditions must be fulfilled in order that study and learning will naturally and necessarily take place, what conditions must be present so that pupils will make the responses which cannot help having learning as their consequence.[9]

Thus an experiment in which certain learning conditions are set up as commonly found in progressive schools and in which certain specific changes in pupils are noted, is a timely contribution to the science of progressive education. Such a contribution was made in a study[10] recently completed in the Burris Campus Laboratory School of Ball State Teachers College.

THE PROBLEM

The purpose of this study was to analyze and to measure the growth of fifth and sixth grade children working under experimental conditions commonly found in progressive schools.

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[8] Barnes, E. A., and Young, B. M. *Children and Architecture* (New York: Bureau of Publications, Teachers College, Columbia University, 1932), p. xvi: "In writing an account of this work, the authors have not tried to prove any thesis nor to demonstrate by conclusive evidence that the best method for children is by means of units of work. They are convinced of the efficacy of this means of instruction but they cannot produce scientific data to substantiate their conclusions."

[9] Dewey, *op. cit.*, p. 204.

[10] Pistor, F. *A Comparative Study of the Growth of Children under Traditional and Progressive Practices*, Unpublished Doctor's Dissertation, School of Education, New York University, 1934.

Two equated groups of children were studied. Group one consisted of pupils who enrolled with the experimenter as their teacher for fifth grade work in September, 1929. These children came from the city school which was abandoned when the laboratory school opened. They had spent four years as first, second, third, and fourth grade pupils in the city school where they received a conventional type of education. These children remained with the experimenter for two years as fifth and sixth grade pupils. Group two consisted of children who spent two years as first and second grade pupils in the city school and who were received by the laboratory school as pupils beginning third grade in September, 1929, when the city school was abandoned. These children were taught by one of the laboratory school teachers for two years in third and fourth grades. In September, 1931, they were promoted to the classroom of the experimenter where they were pupils for the next two years as fifth and sixth grade children. The important variable was the nature of the school experiences of the two groups while in grades three and four.[11] Group one had no progressive school experience prior to fifth grade; group two had two years of progressive school experience in the third and fourth grades of the experimental school prior to fifth grade. Twenty-nine pupils were studied in each group.[12]

Comparisons were made between the achievements of the two equated groups while in fifth and sixth grades in terms of specific objectives in personality development. These were in the form of thirty-eight trait-actions. The purpose of these comparisons was to determine which of the two groups had the superior education prior to fifth grade and during fifth and sixth grades, as measured in part by the methods used.

DESCRIPTION OF THE EXPERIMENTAL LEARNING CONDITIONS

No planned-in-advance courses of study in the customary subjects of the elementary school were followed. Instead, the pupils were encouraged and guided to set up worthy objectives, to plan ways of accomplishing these objectives, to execute their plans, to evaluate procedure and modify it when necessary, and to judge the results of their activities. In carrying out this work the following aims determined the role of the teacher:

[11] Other possible variables of minor importance are considered in the author's original document.

[12] Only those pupils enrolled the entire period of experimentation and who could be matched readily for the purpose of equating the groups were studied. In group one, 28 were eliminated and in group two, 14.

1. To develop the individuality of the child as completely as possible so he will have far more wisdom with which to appraise the social order and to cooperate in remaking it.

2. To build such intelligent, conscientious, self-directing personalities that will follow their best insight against anything else, being at the same time, however, duly impressed with their own fallibility, and with the essential need of coöperating to the common good.[13]

3. To have the children learn methods in securing group action, in controlling group living, and in organizing experiences so that they can become increasingly independent in habits of study.

4. To develop the power of independent reasoning, rather than to build up an accumulation of memory material.

5. To help the children develop a technique of research which will make them increasingly independent in habits of study.

6. To encourage the children as a group to seek out and use the special interests, attitudes, gifts, and abilities of its members in order to further each child's opportunities of realizing his possibilities and in order to enrich the experiences of the group.

7. To allow the children to experience joy in creating. Experience resulting from keen interest on the part of the pupils is a valuable experience regardless of the merit of the thing created. Technique is not an end in itself and as such should not be emphasized. Originality in technique is desirable.

The children were helped in selecting and planning units of work which were of four types:

1. The studies of the environment consisted of activities whose intellectual possibilities consisted of resyntheses of subject matter cross-sectioning the more vital phases of the conventional content subjects.

2. The creative arts consisted of activities dominated by the play impulse which utilized aspects of music, fine arts, dramatics, literature, writing, and construction. These activities were related often to the unit of study of the environment, but were just as often unrelated to the other enterprises.

3. The maintenance and self-governmental activities of the children were their attempts to assume responsibility for the reoccurring affairs of the day. In seeking better ways of planning and performing their duties the children carried on much first-hand experiencing and con-

[13] Adapted from a statement made at the December, 1931, session of the Cleveland Conference by W. H. Kilpatrick.

tinuous reference reading. The duties were performed by twelve committees:

Cleaning and arranging the workshop and the furniture
Caring for blackboards, floor, desk, and lockers
Health and citizenship in the classroom
Toolkeeping
Ventilation, lighting, heating
Classroom library
Class records and supplies
Supplies, materials, and visual equipment
Utensils, paints, and brushes
Citizenship and safety on the street and playground
Citizenship in other parts of the building
Classroom bulletin board and exhibits

4. The tool subjects were considered as by-products of the units of work in the above three fields. They included specific learnings in reading, language, spelling, penmanship, and computation which were needed in the other activities of the children.

The units of work were selected in the following ways:[14]

1. The teacher begun with no definite idea for the unit, either as to subject-matter content or methods of carrying it out. He listed the suggestions for a unit made by the pupils and helped the children prepare lists of possible contents for the proposed units. These contents were in the form of things to do, places to visit, and questions to answer. Each group presented to the whole class for its consideration a proposed unit and its possibilities. As this went on, the teacher called the attention of the pupils to criteria for selecting a worth-while unit. As the attention of the class gradually focused on the units which seemed more worth while, the activity of sponsors for units based on cursory, temporary, and capricious interests subsided. After several days of campaigning, the final selection was made by class vote.

2. The teacher began with no definite idea for the unit. He listed the suggestions of the pupils which were interesting immediate or remote experiences. As these suggestions were made, the teacher led the group to explore them. In so doing, he was able to determine the

[14] Some of these methods of selecting units are similar to those reported by Hopkins, L. T. "Curriculum Making in a Child-Centered School," *Educational Method*, XI (April, 1932), pp. 410-414.

intensity of group interest in a suggestion. When there was enough incipient interest manifested in the group toward a proposal, the teacher attempted to arouse activity toward the unit. If the interest subsided, the teacher turned to another suggested unit and repeated the process of orientation. Through a period of several weeks there emerged a permanent interest which the teacher capitalized into a unit of work.

3. The teacher selected and prepared a unit in advance because he believed it fell within certain areas in which the genuine interests of children at that age are usually located. He suggested the unit and showed its possibilities to the class, permitting the group to suggest its own ways of carrying out the unit. When tentative plans were completed, each child was permitted to vote for or against the plans. If not enough children voted for the plans, the plans were either modified or the teacher suggested another unit.

4. The teacher selected and prepared a unit in advance after examining the previous education of the particular group and decided that the unit was necessary to give richness, area, or breadth to their experience, or to fill in what appeared to be important gaps. He suggested the unit and outlined its possibilities and led the pupils to give reasons why it should be undertaken. These reasons were often similar to his own. Tentative plans were made coöperatively, and the group was given opportunity to vote for or against the unit.

5. Short-time and minor units were selected less formally and in proportionately less time.

Methods one, two, three, and five were used about equally as often in grade five and in the first half of grade six. Method four was the only method used in the second half of grade six for selecting the large units.

PROCEDURE

Since the experimental traits were intricately dependent upon many factors, it was considered best to equate the groups by as many bases as possible. The data used for this purpose were obtained for the period when the children were in the first month of the third grade. Table I gives the summary of the comparisons of the two groups. The two groups were equal in mental age, in motor ability, in home surroundings, and in educational achievement. In all other traits, chronological age, the social qualities, and home training, group one was proved to be slightly superior.

TABLE I

COMPARISON OF THE TWO GROUPS EQUATED BY SEVEN BASES

	Group One		Group Two		Critical Ratio
	Mean	S. D.	Mean	S. D.	
1. Mental Age	109.7	13.3	109.1	14.3	.16
2. Chronological Age	102.6	7.2	99.8	5.7	1.64
3. Motor Ability	37.4	8.9	37.8	5.3	.21
4. Social Qualities:					
Coöperation	3.2	.28	3.1	.34	1.30
Initiative	2.7	1.02	2.5	.26	1.00
Popularity	3.9	.26	3.8	.25	1.50
5. Home Training	3.9	.26	3.8	.25	1.50
6. Home Surroundings	21.6	6.7	21.1	7.4	.28
7. Educational Achievement	15.8	7.5	13.9	8.0	.92

The thirty-eight trait-actions, referred to above, were selected on the bases of frequency of occurrence in pupil activities, ease of being observed in the classroom, ease of being culled from stenographic records, agreement with class objectives, and agreement with the principles and practices of progressive schools. In order to validate the trait-actions on the last basis, they were submitted to one hundred educators identified with progressive education. Returns were received from seventy-three judges. Table II gives the analysis of the report of these judges.

TABLE II

ANALYSIS OF THE REPORT OF THE JUDGES ON THE VALIDITY OF THE TRAIT-ACTIONS

INITIATIVE may be developed in part by encouraging fifth and sixth grade children:

	Yes	No	No Reply
1. To suggest activities or problems for the group to consider and to undertake	72	1	0
2. To suggest possible ways of carrying out an activity or methods of solving a problem	73	0	0
3. To suggest advantages or disadvantages of procedure	71	1	1
4. To volunteer to be chairman or a member of a committee	69	3	1
5. To criticize work by bringing out good points or by offering suggestions for improvement	71	1	1
6. To accept the word of the teacher without question as final in all matters.*	(1)	(71)	(1)
7. To ask questions of other children in order to understand their reports more fully	71	1	1
8. To ask the teacher for help when the work is not understood	68	3	2
9. To show evidences of leadership in group work	70	2	1
10. To vote as the majority do on all issues pertaining to group government.*	(2)	(68)	(3)
11. To carry out an original idea in art or in construction work or experimental work. (Original here means original for the child.)	72	1	0
12. To defend a point which appears correct to the child even when the majority differ	70	1	2

WORK-SPIRIT may be developed in part by encouraging fifth and sixth grade children:

	Yes	No	No Reply
1. To bring in voluntarily from home or elsewhere news clippings, books, or selections containing appropriate material to be shared with others	73	0	0

TABLE II—*Continued*

	Yes	No	No Reply
2. To engage voluntarily in art, construction, or experimentation at home or elsewhere and to bring in results for class consideration	73	0	0
3. To bring in voluntarily from home or elsewhere pictures, samples, or exhibits to explain or to show to the class	73	0	0
4. To engage in voluntary work for the class or on Saturdays (Providing local conditions permit.)	70	1	2
5. To volunteer in emergencies for extra work which will be for the good of the group	73	0	0
6. To use spare time wisely at the beginning of a session	70	3	0
7. To march in a straight, orderly line while passing in the halls.*	(8)	(62)	(3)
8. To use spare time wisely when completing work sooner than others	71	1	1
9. To work without depending upon unnecessary help	71	2	0
10. To concentrate deeply on work which requires close attention	69	2	2
11. To avoid passing notes to others at any time.*	(27)	(44)	(2)
12. To be prompt in getting materials, in organizing them for work, and in getting started	69	2	2

*Trait-actions thus marked were not used in the experimental work but were included in the questionnaire as dummy trait-actions necessitating negative answers. These served to indicate the care with which each judge evaluated the material.

RELIABILITY may be developed in part by encouraging fifth and sixth grade children:

	Yes	No	No Reply
1. To perform assigned or selected duties in classroom maintenance work. (e. g. examining and checking returned tools; arranging material on bulletin)	71	2	0
2. To work as efficiently when the teacher leaves the room or is not near by	70	3	0
3. To hold oneself responsible to others for conduct	48	22	3
4. To avoid running while playing on the playground*	(1)	(67)	(5)

COÖPERATION may be developed in part by encouraging fifth and sixth grade children:

	Yes	No	No Reply
1. To avoid working with others whose beliefs differ from theirs.*	(0)	(71)	(2)
2. To avoid "bossing" others in the group	66	7	0
3. To help others when help is necessary	72	1	0
4. To inhibit actions which interfere with carrying forward the purpose of the group	70	2	1

COURTESY may be developed in part by encouraging fifth and sixth grade children:

	Yes	No	No Reply
1. To avoid carrying on conversation with neighbors when attention should be given elsewhere	71	2	0
2. To obey the pupil-chairman at all times.*	(38)	(26)	(9)
3. To be courteous when speaking to others	72	1	0
4. To avoid touching or borrowing property of others without their permission	56	6	11

WORTHY GROUP-MEMBERSHIP may be developed in part by encouraging fifth and sixth grade children:

	Yes	No	No Reply
1. To know and to respect the diversified abilities and resources of the members of the class	72	1	0
2. To be efficient and expeditious in the program of group government and maintenance	69	2	2
3. To be natural and unrestrained at all times.*	(26)	(36)	(11)
4. To know and to be able to evaluate the common objectives of the group	70	1	2
5. To have contact with other social groups	70	1	2

TABLE II—*Continued*

GOOD HOUSEKEEPING may be developed in part by encouraging fifth and sixth grade children:

	Yes	No	No Reply
1. To bring no materials such as old wood, cloth, tin, or cardboard into school.*	(10)	(55)	(8)
2. To keep materials and books neatly arranged in their desks	71	1	1
3. To let no materials or paper remain on the floor	58	12	3
4. To return books, tools, equipment, and unused portions of material clean and undamaged to proper places	72	1	0
5. To keep clean, orderly lockers	72	1	0
6. To keep written work neatly arranged, legible, and free from blots and eraser marks	66	4	3

TABLE III

SUMMARY OF THE REPORT OF THE JUDGES

All of the 73 judges voted YES for	5	of the 38	trait-actions
72 of the 73 judges voted YES for	7	of the 38	trait-actions
71 of the 73 judges voted YES for	8	of the 38	trait-actions
70 of the 73 judges voted YES for	8	of the 38	trait-actions
69 of the 73 judges voted YES for	4	of the 38	trait-actions
68 of the 73 judges voted YES for	1	of the 38	trait-actions
66 of the 73 judges voted YES for	2	of the 38	trait-actions
58 of the 73 judges voted YES for	1	of the 38	trait-actions
56 of the 73 judges voted YES for	1	of the 38	trait-actions
48 of the 73 judges voted YES for	1	of the 38	trait-actions

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Table III summarizes the report of the seventy-three judges on the validity of the trait-actions.

Thirty-four[15] of these trait-actions were recorded in classroom observation periods so scheduled as to be comparable in length, frequency, and type of activity. The observation periods were so distributed through the four-year period of investigation that the classroom activities of every alternate two-week period were measured.

The observation periods were of six types:

Type A Practice or drill periods
Type B Conference periods
Type C Problem-solving periods
Type D Creative work or construction periods.
Type E Directed study or researeh periods
Type F Before-school periods

The trait-actions were recorded by trained observers and stenographers. Pairs of observers only were used in period-types A, E, and F. Both observers and stenographers were used in period-types B, C, and D.

[15]Four of the thirty-eight trait-actions appearing under the heading of worthy group membership were not observed in the classroom activities of the pupils. Lack of space prohibits including the report on these and some other associated minor studies.

The observers were equipped with lists[16] of six to nine trait-actions and mimeographed seating charts on which to record in code the trait-actions manifested by each child. The stenographic notes of periods B, C, and D were given to pairs of interpreters, equipped with lists of trait-actions similar to those used by the observers, who culled the trait-actions from the manuscripts.

THE RELIABILITY OF THE WORKERS

The Reliability of the Observers in the A, E, and F Periods.—The reliability of the observers who worked in pairs but without stenographers was tested by comparing their reports of single lessons. It was found inadvisable to compute the coefficient of correlation because the items being compared varied in more than one respect. Percentages of agreement of the two observers in a single lesson were computed for sixty-four periods of each type, A, E, and F, making a total of 192 periods. This was done by selecting at random one period of each type from each of the sixty-four observation weeks.[17]

Table IV gives the mean percentages of agreement of the pairs of observers.

TABLE IV

COMPARISON OF MEAN PERCENTAGES OF AGREEMENT OF OBSERVERS IN PERIODS OF THE TYPES A, E, AND F FOR THE TWO GROUPS OF PUPILS

	Group One			Group Two		
Lesson Types:	A	E	F	A	E	F
Grade 5B	88.8	87.6	92.6	91.6	90.8	88.4
Grade 5A	89.5	87.0	88.8	87.5	91.6	85.7
Grade 6B	88.7	91.2	90.8	89.8	88.2	88.3
Grade 6A	87.8	85.3	89.4	91.7	86.0	91.3
Mean		89.0			89.2	
S. D.		10.2			10.1	

THE RELIABILITY OF THE INTERPRETERS AND THE OBSERVERS OF THE B, C, AND D LESSONS

The reports of the two interpreters of the stenographic manuscripts were compared with each other and with those of the two observers for each of the same lessons. Percentages of agreement of the four workers

[16] A different list was used for each of the six types of lessons. The trait-actions on each list were few in number, easily memorized by the workers trained for this work, and so combined as not to scatter the attention of the workers. These lists are given in the author's dissertation.

[17] Pistor, F. *op. cit.*, p. 114, Appendix, Table XXIV.

were computed for sixty-four periods of each type, B, C, and D, making a total of 192 periods. This was done by selecting at random one period of each type from each of the sixty-four observation weeks.[18]

TABLE V

COMPARISON OF MEAN PERCENTAGES OF AGREEMENT OF WORKERS IN PERIODS OF THE TYPES B, C, AND D FOR THE TWO GROUPS OF PUPILS

Lesson Types:	Group One			Group Two		
	B	C	D	B	C	D
Grade 5B	87.0	90.0	85.9	90.5	91.3	83.7
Grade 5A	89.6	88.9	87.0	89.6	90.3	85.2
Grade 6B	86.6	88.1	88.4	88.2	87.5	87.2
Grade 6A	88.9	90.2	86.9	88.0	86.0	82.4
Mean		88.1			87.5	
S. D.		8.9			10.4	

Table V gives the mean percentages of agreement of the pairs of observers.

THE RELIABILITY OF THE DISTRIBUTIONS OF THE TRAIT-ACTIONS

In order to test the reliability of the reports of the various workers, the first week totals of every two-week measuring period were compared with the second week totals. This was possible because the schedule of observations for every observation week was the same. It was decided to correlate the totals for each trait-action which were agreed upon by at least two of the workers and which were counted into the final tabulations. The method of rank-differences was employed and the value of r was inferred from the obtained rho. The Spearman-Brown formula, $r_x = \frac{2\ rh}{1 + rh}$, was used to calculate the reliability of the whole distribution.[19] The range of r_x's was from 97 to 18, or 79. The mean r_x for group one was $.715 \pm .261$ and the mean r_x for group two was $.720 \pm .157$. In general, it may be said that the degree of reliability for the two groups was marked or high, and approximately equal for the two groups.

ANALYSIS OF THE TABULATED TRAIT-ACTIONS

The trait-actions recorded in a single lesson by the various workers were counted in the final tabulations only when they were reported by at least two of the workers. The tabulated trait-actions for the two

[18] Pistor, F. *op. cit.*, p. 115, Appendix, Table XXV.
[19] Pistor, F. *op. cit.*, p. 116, Appendix, Table XXVI.

groups of children were studied in four ways: 1, a general comparison was made of the two groups of children for the two-year periods; 2, a comparison was made of the two groups for the first measuring period in fifth grade; 3, a comparison was made of the progress of both groups in manifesting the trait-actions; and 4, a comparison was made of the trait-actions manifested during the first measuring period with those manifested during the last measuring period. This was done for each of the two groups.

GENERAL COMPARISON OF BOTH GROUPS FOR THE TWO-YEAR PERIODS

The number of trait-actions of each kind reported for group one for the two-year period was compared with those reported for group two for the same length of time. Table VI gives the mean and the standard deviation of the distributions for both groups of children, and other data used in comparing the two groups. It is to be noted that group two, the group consisting of pupils with two previous years of experience working under experimental conditions, was superior in most of the trait-actions listed. Group two manifested more positive or desirable trait-actions than group one. Group two manifested fewer negative or undesirable trait-actions than group one. The table shows that there is complete reliability of true differences in the cases of all the trait-actions except four. For these four trait-actions, N9[20], W3, C2, and C3, the chances are 89, 98, 83, and 82 respectively, in 100 that the difference between the true means is greater than zero.

COMPARISON OF GROUPS FOR THE FIRST TWO-WEEKS' MEASURING PERIOD

Since the two groups at the beginning of fifth grade differed in their previous school experience, group one having been in third and fourth grades in a traditional school, and group two having been in the third and fourth grades of the experimental school, it was believed some differences in the trait-actions manifested by the two groups at the beginning of fifth grade might be noted. The total number of trait-actions of each kind as tabulated for each group for the first two weeks' measuring period were compared. Table VII contains data used in com-

[20]N9 is the code letter for Initiative Nine, or the ninth trait-action under Initiative. The other letters used and what they denote are: R—Reliability, C—Coöperation, P—Courtesy, H—Housekeeping, W—Work-Spirit negative trait-actions, and X—Work-Spirit positive trait-actions. All the trait-actions on the lists of the workers were negatively stated except the ten Initiative trait-actions and the five X—Work-Spirit trait-actions.

paring group one with group two for the first two-weeks' measuring period. Study of this table shows that neither group was proved superior in all of the trait-actions. Of the ten positive initiative trait-

TABLE VI

COMPARISON OF TRAIT-ACTION DISTRIBUTIONS OF BOTH GROUPS FOR THE TWO-YEAR PERIODS

Code Letters of Trait-Actions	Group One		Group Two		Diff. Means	Sigma Diff.	Critical Ratio
	Mean	S. D.	Mean	S. D.			
Positive:							
N1	73.4	24.5	176.9	72.9	103.5	13.50	7.6
N2	77.5	24.3	130.0	32.5	52.5	7.16	7.3
N3	66.7	19.5	121.0	26.8	54.3	5.85	9.2
N4	48.3	11.1	57.6	10.7	9.3	2.72	3.4
N5	27.5	8.7	75.2	15.0	47.7	3.06	15.5
N6	30.6	11.9	85.3	18.5	54.7	3.88	14.1
N7	19.7	6.8	31.1	7.4	11.4	1.77	6.4
N8	46.8	10.5	72.7	12.9	25.9	2.93	8.8
N9	60.5	19.7	66.2	16.5	5.7	4.53	1.2
N10	11.4	3.2	36.9	8.5	25.5	1.60	15.9
X1	41.4	15.2	62.5	10.9	21.1	3.29	6.4
X2	7.1	3.8	25.4	8.9	18.3	1.70	10.7
X3	5.4	4.0	78.6	20.2	73.2	3.63	20.1
X4	8.1	4.2	12.9	5.3	4.8	1.19	4.0
X5	3.5	2.3	10.1	7.1	6.6	1.30	5.1
Negative:							
W1	27.8	17.3	4.7	2.6	23.1	3.08	7.5
W2	20.9	9.6	1.1	0.9	19.8	1.75	11.3
W3	3.8	3.1	1.9	1.3	1.9	0.88	2.2
W4	16.7	8.8	3.2	2.7	13.5	1.62	8.3
W5	4.1	2.8	1.9	1.6	2.2	0.55	4.0
R1	15.5	11.3	9.0	4.8	6.5	2.16	3.0
R2	4.5	2.9	1.2	1.2	3.3	0.56	5.9
R3	10.3	7.2	2.6	2.0	7.7	1.31	5.8
C1	8.5	6.0	4.3	3.0	4.2	1.19	3.5
C2	12.9	7.3	10.3	6.1	1.6	1.69	0.9
C3	6.9	4.4	6.0	3.6	0.9	1.00	0.9
P1	9.8	5.8	3.1	1.9	6.7	1.09	6.1
P2	7.0	2.6	1.2	1.4	5.8	0.51	11.3
P3	7.9	4.5	2.4	1.4	5.5	0.84	6.5
H1	34.3	19.1	3.5	2.0	37.8	0.48	64.1
H2	17.5	12.9	5.7	2.7	11.8	2.26	5.2
H3	7.9	4.6	2.2	1.6	5.7	0.87	6.5
H4	32.8	13.8	8.6	4.5	24.2	2.54	9.5
H5	24.0	14.3	3.7	2.5	20.3	2.55	7.9

actions, group two was proved superior in N2, N3, N5, and the chances were high that it was also superior in N1, N4, N7, and N10. Of the positive work-spirit trait-actions, group two was proved superior in X1, X3, and X5. The differences in X2 and X4 are insignificant. Of the

TABLE VII

COMPARISON OF TRAIT-ACTION DISTRIBUTIONS OF BOTH GROUPS FOR THE FIRST TWO-WEEKS' MEASURING PERIOD

Code Letters of Trait-Actions	Group One		Group Two		Diff. Means	Sigma Diff.	Critical Ratio
	Mean	S. D.	Mean	S. D.			
Positive:							
N 1	1.5	1.6	2.1	2.3	0.6	.52	1.2
N 2	2.8	1.8	5.1	3.0	2.3	.65	3.6
N 3	1.6	1.4	5.2	2.5	3.6	.54	6.7
N 4	2.2	1.4	3.1	1.5	0.9	.36	2.5
N 5	1.4	1.0	3.5	1.7	2.1	.36	5.8
N 6	1.2	1.2	3.8	1.2	2.6	.25	1.0
N 7	0.8	0.8	1.5	1.1	0.7	.25	2.8
N 8	2.3	1.5	3.4	1.8	1.1	.44	0.2
N 9	2.7	1.3	2.9	1.6	0.2	.38	0.5
N10	0.4	1.0	1.6	1.9	1.2	.40	2.9
X 1	0.9	1.5	3.1	2.5	2.2	.54	4.1
X 2	0.4	*	0.9	*	*	*	*
X 3	0.0	0.0	3.9	2.8	3.9	.54	7.2
X 4	0.1	*	0.6	*	*	*	*
X 5	0.3	0.0	1.4	1.1	1.1	.19	7.2
Negative:							
W1	5.2	2.5	0.4	0.4	4.8	.48	1.0
W2	2.9	2.2	0.2	0.5	2.7	.42	6.4
W3	6.6	—	0.1	—	—	—	—
W4	2.5	2.6	0.2	0.5	2.3	.49	4.7
W5	0.5	—	0.2	—	—	—	—
R1	2.5	2.0	0.2	9.0	2.3	1.72	1.3
R2	0.6	—	0.3	—	—	—	—
R3	1.5	1.6	0.4	0.0	1.1	.10	10.6
C1	0.5	—	0.5	—	—	—	—
C2	1.5	1.1	0.7	0.9	0.8	.26	3.1
C3	0.5	—	0.4	—	—	—	—
P1	1.4	1.7	0.1	0.3	1.3	.10	12.6
P2	0.7	—	0.1	—	—	—	—
P3	0.7	—	0.3	—	—	—	—
H1	4.4	2.8	0.4	0.7	4.0	.53	7.4
H2	2.9	2.9	0.6	0.7	2.3	.56	4.1
H3	0.0	—	0.3	—	—	—	—
H4	4.3	2.1	1.3	1.5	3.0	.48	6.2
H5	3.7	3.0	0.7	6.4	3.0	1.31	2.2

*The blanks indicate that no complications were made because of too few cases.

negative work-spirit trait-actions, group two was superior in W2 and W4, with high chances of actual superiority in W1. Of the remaining trait-actions, group two was proved superior in R3, C2, P1, H1, H2, and H4. It has high chances of being actually superior in R1 and H5. Comparisons of the other trait-actions showed little or no significant difference. In summarizing, it is to be noted that of the 34 trait-actions, there are 14 for which complete reliability of a true difference was found; 5 for which chances of 90 or more out of 100 were found of a true difference;

5 trait-actions where the chances were too low to guarantee any superiority; and 10 trait-actions for which no significant differences could be found. Group two was proved often superior to group one, but at no time was group two proved inferior to group one in the number of trait-actions manifested during the first two-weeks' measuring period.

COMPARISON OF THE PROGRESS OF BOTH GROUPS

The progress of both groups in manifesting the trait-actions was compared. This cannot be described adequately in this article.[21] In general, both groups showed improvement.

COMPARISON OF FIRST AND LAST TWO-WEEKS' MEASURING PERIODS

While both groups showed improvement, group two made the greater amount of growth in positive trait-actions. No comparison was made of the growth in negative trait-actions because group two measured so nearly excellent constantly and was not measured adequately by the set of negative trait-actions used for purposes of this type of comparison.[22]

TESTING ACADEMIC ACHIEVEMENT

The pupils of both groups were tested in achievement when they were in grades 5.1, 6.1, and 6.9. The results of these tests are included here to show that the pupils in the experiment did somewhat better than average pupils in traditional schools. It is understood of course, that the norms for progressive schools necessarily differ from the norms established for traditional schools. Table VIII gives the grade scores of the two groups.

TABLE VIII

GRADE SCORES OF THE TWO GROUPS IN ACHIEVEMENT

Test given in grade:	5.1		6.1		6.9	
Group:	1	2	1	2	1	2
Reading	5.5	5.6	6.7	7.2	7.8	9.0
Dictation	4.6	4.6	6.0	5.7	6.4	6.4
Language Usage	6.0	6.2	5.4	7.6	8.1	8.4
Literature	4.9	5.9	5.8	7.8	6.4	7.6
History	4.7	4.9	5.9	7.0	6.4	7.4
Geography	4.9	5.5	6.7	7.5	7.9	8.5
Hygiene	4.5	5.5	6.2	6.3	6.8	7.9
Arithmetic	4.6	4.9	6.1	6.7	7.2	8.4
Total Score	5.0	5.4	6.1	7.0	7.1	7.9

[21] Pistor, F. *op. cit.*, pp. 73-75; 117-150.
[22] *Ibid.*, pp. 75-80.

TABLE IX

COMPARISON OF THE TWO GROUPS IN ACHIEVEMENT

Test given in grade:	5.1		6.1		6.9	
Group:	1	2	1	2	1	2
Mean Total Score	63.0	67.0	75.0	82.0	83.0	89.0
S. D.	7.1	8.8	8.7	8.5	10.0	10.4
σ (M)	1.3	1.6	1.6	1.6	1.8	1.9
Diff. Means	4.0		7.0		6.0	
Sigma Diff.	2.1		2.3		2.6	
Critical Ratio	1.5		3.1		2.3	

Table IX gives data used in comparing the two groups in achievement. The critical ratio of 1.5 indicates chances of 93 in 100 that group two is actually superior in the grade 5.1 testing; the critical ratio of 3.1 indicates complete reliability that group two was superior in the grade 6.1 testing; and the critical ratio of 2.3 indicates chances of 99 in 100 that group two was superior to group one in the grade 6.9 testing. In general, both groups did better than the average traditional class. Both groups improved in their ability to exceed the traditional norm. Group two, the group with progressive school experience prior to fifth grade, made the greater improvement in this ability.

CONCLUSIONS

This investigation can be considered a worth-while study of an enterprise in progressive education partially because:

1. Some of the outcomes of progressive education, stated in terms of objectives validated by a substantial group of progressive educators, have been measured.

2. A long enough period made it possible to study some of the higher and finer values of education. Each group was studied over a period of four years.

3. Some appropriate techniques were developed, utilized, and proved adequate for measuring the more subtle phases of classroom work in a progressive school.

4. Not only status of growth but also process of growth was measured with two types of groups in a progressive school.

The results obtained can be considered valid only for the pupils studied and under the experimental learning conditions listed and described as set up by the teachers involved.

This study showed that growth took place in both groups while experiencing progressive treatment. However, group two, the group with

two additional years of experience in a progressive school, was proved superior in almost all of the specific aspects of personality and of scholarship which were studied.

The evidence indicates that the superiority of group two in grades five and six was due to the nature of the experiences gained in grades three and four of the progressive school. Not only did these third and fourth grade experiences make for the superiority of group two at the beginning of fifth grade but they were followed by the ability of the group to make greater gains in almost all of the personality trait-actions and in general scholarship.

A NON-READER READS

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THE following case of reading disability is presented in order to direct attention to the possibilities of improvement in reading when existing physical, psychological, and mechanical handicaps are recognized, corrected, and followed by a systematic program of re-education. A child who is reading poorly or not at all too often receives only additional drill, with little or no attention to the underlying handicaps which make the reading so poor.

It has been our experience that following the removal of such anomalous conditions, particularly those referable to vision and fusion of the visual images, remedial training in reading progresses more rapidly and a much more satisfactory result is obtained. It is also most important that the after treatment instruction in reading be administered scientifically, and that the method be carefully adapted to the capabilities of the child. It must be remembered that the reading method employed officially in any given school system may not be the easiest for the handicapped child, and it is frequently necessary to teach reading by other means in such cases.

Dick, a boy eight years of age, was referred because of inability to learn to read, although of apparently normal intelligence. He presented a history of having had an unsympathetic first grade teacher whom he did not like. He was promoted, but failed in the second grade although he was on good terms with the teacher and received additional help from the principal of the school. During a summer spent at a boys' camp he first came under Mr. Peabody's observation and, as a result of training and association with the other boys of about his own age, he overcame some of his aversion to school.

Dick displayed the characteristics of a spoiled child who was accustomed to having his own way in all things. He had been indulged since babyhood and had enjoyed the services of a nurse all his life.

Birth had been normal and at full term. No serious illnesses were reported, and a recent physical examination had been negative. Age of walking and talking was reported as normal. No history of sinistrality was given.

Psychometric examinations were made by Miss Hope L. Joslin, of the Rhode Island Society for Mental Hygiene, who reported as follows: "On the Stanford Binet Scale the range was from VI years, where all tests were passed, to the X years, where all tests were failed. The only failure at the VII year level, however, was in reversing three digits. At VIII years plan for the ball and field was not satisfactory and he was unable to count backward from 20 to 1. Other tests were passed, although the vocabulary was barely passed. At IX years the patient succeeded in the weight discrimination; construction of a sentence with three words; and in the rhymes. As a whole, therefore, he revealed average reasoning ability, vocabulary, and very good language comprehension and usage. His ability to concentrate, as in reversing digits, was not good. On the scale of performance tests the range was similarly from VI years to X and a half years. Here again he did poorest on the tests of a routine nature demanding concentration; Knox Cube, Kohs Block Design, etc. On the form boards and on the tests demanding reasoning in a concrete social situation he did well and showed very good foresight and planning ability on the Porteus Mazes. The findings are indicative of average intellectual ability."

The boy was then referred as a private patient to Dr. Thomas H. Eames and was examined on September 17, 1932. Vision was found to be within normal limits as measured by the Snellen Chart, which is commonly used in school vision tests. The eyes were moderately farsighted. Ophthalmoscopic examination of the eye-grounds and refractive media revealed nothing of a pathological or anomalous nature. It was found, however, that fusion, which is the mental combination of the image from each eye into one binocular image, was of extremely low grade, particularly when letters of primer size or smaller were being regarded. Reading was being done with either eye singly, depending on which first fixated the text. During this time the image arising from the other eye served to confuse and interfere with the work of the eye being used. Binocular vision was therefore absent in reading and the eyes were somewhat incoördinate, both at the reading distance and in distant vision. All lateral dominance tests were responded to dextrally.

Attention is called to the fact that although eye trouble was present to a degree such as to constitute a serious handicap in learning to read, the difficulties were of such a nature that the vision tests, ordinarily given in the public schools by the teacher or school nurse, could not and did not disclose their presence. The ordinary tests of vision employed in most

public schools merely indicate the sharpness of vision and, as in the present case, many reading disability cases with extremely troublesome eye conditions are able to pass the test because the difficulties do not interfere with gross distant vision. Such vision tests as indicators of eye trouble in reading disability are of almost no value and cannot be relied upon.

Summarizing in his report Dr. Eames said in part, "In my opinion the boy is being held back by fusional deficiencies. It is very difficult for him to associate ideas of sound or sense with the confused, variable, number and letter forms which are presented to him by his incoördinate eyes. There is no doubt that he has had too much well-meaning yet misdirected pampering. He should attend a school where he can associate on equal footing with children of his own age and should receive no special consideration as regards conduct. His scholarship should be overlooked for the present. Very little progress can be expected until the fusional difficulty has been reduced and this will require several months of treatment. This should be administered by some intelligent person who has had experience in dealing with problem children."

Dr. Eames prescribed a series of fusion training exercises[1] adapted to the needs of Dick's eyes and also suggested that the Gates Primary Reading Test be given at intervals of six to eight weeks so as to provide an objective measurement of progress. This test had been administered once a few weeks before the close of the boys' camp and the patient had been unable to score on it at all.

In view of the general situation it was arranged that the boy should reside with Mr. Robert W. Peabody, whose school he was to attend during the following year. The fusion training exercises, prescribed by Dr. Eames, were to be administered by Mr. Peabody who also was to give the boy remedial instruction as well as general training in self reliance and ordinary conventional behavior.

Dick went to live with Mr. Peabody on the second of October, 1932, and on the day following was enrolled in the Laurel Hill Avenue Platoon School of which Mr. Peabody was the Supervising Principal. So

[1]A description of the exercises employed in this case has been omitted because it is an individual affair and would not be applicable to reading disability cases in general. In such cases as require an exercise, its nature is determined by the needs of the individual. The indiscriminate use of eye exercises by teachers or psychologists without the necessary background in ophthalmology or optics would be dangerous, and the question of violation of medical, optometrical, and physical therapy practice laws would be raised.

deep had been Dick's dislike for school that the entire first week's program was designed to orient and interest him in his new environment, and most of his time was spent wherever he chose. Nature, physical education, auditorium, music, social sciences, and literature, in the order named, interested him most. From the first he was passive, reticent, and timid. The teachers understood his problem and for the most part paid little or not any attention to him. Here was a new kind of school teacher, an entire school full in fact, who would not ridicule a fellow if he could not read; who would not make sarcastic remarks, and, what was most remarkable of all, would actually smile reassuringly as one passed through the maze of corridors and rooms in this twenty unit platoon school.

After the first week, when a definite liking for school had been implanted, Dick was placed in an ungraded room where he could work with boys and girls of his own age, chronologically and mentally. Without the kind, yet firm guidance of his homeroom teacher, Miss Frances Norton, it is doubtful if Dick would have done as well as he eventually did.

At first, work was done on the blackboard using letters which were from three to four inches in height. An association was built up between the words and pictures used in the Revised Bolenius Primer. At home Mr. Peabody made a copy of the same primer on pieces of Oaktag, using letters about two inches in height. The regular flash and phrase cards in the Bolenius equipment were used. A conscious attempt was made to build up a word-picture association much in excess of what would be attempted in teaching a child without a fusional handicap. The Bolenius Work Books were also used profitably.

In the home room a unit of work on Holland was carried on. Directions were written out for Dick, who carried out his part in the unit of work by first working out his directions. Similarly, in the social science room, a unit of work on Indians was used to motivate his reading and writing.

Tutoring at home supplemented the work done in school. Special activity rooms were used largely as a means of rewarding favorable attempts at writing on the board and in making school a thoroughly pleasant experience. Dick's attitude throughout remained excellent. Our great difficulty was in keeping him at any given task for more than two minutes at a time.

The stereoscopic fusion exercises were carried out with some difficulty. Dick had to be constantly encouraged in order to get him to try and derive the maximum benefit from them.

By the end of the second week Dick had mastered eleven new words; a new world was gradually unfolding; the thrill of achievement was being experienced as never before. Week by week the number of new words actually mastered steadily increased. By the end of eleven weeks a basic vocabulary of two hundred and nineteen words had been developed. From then on it seemed advisable to measure improvement by means of the Gates Primary Reading Tests.

According to Monroe's Qualitative Measurement of Reading Tests, Dick was weak in the following in the order listed: Reversals, faulty vowels, faulty consonants, addition of sounds, omission of sounds, and substitution of words. Special drills were given from time to time in an attempt to remedy these defects.

During the tenth week, after one hundred and fifty treatments had been given on the stereoscopic apparatus, Dick's fusion had improved sufficiently so that he could read primer sized type with very little difficulty. At that time his writing had developed from large, three inch letters, to what might be expected normally in the last half of the second grade.

School adjustment continued so that at Christmas time Dick took part in two plays. Under the stimulus of rapidly improving school work, Dick had come to have less of the passive attitude that characterized his behavior in October, and more of the self reliance that normal boys should exhibit.

Miss Helen Ballard, teacher of speech correction, had Dick join her weekly class. By December he was able to stand up and tell stories with apparent ease.

The results of the Gates Tests are as follows:

Date	Reading Grade	Reading Age	
Dec. 14	1.4	6.8	
Jan. 24	1.85	7.35	
Feb. 28	2.2	7.7	
Apr. 12	2.4	7.9	
May 10	3.1	8.8	(Chron. Age 8.9)
June 14	3.1	8.8	

One would hardly believe the change that has come over Dick, from a personality point of view, during the past year. He now has the

appearance of a normal acting boy; aggressive, confident, and full of self assurance. He has asked his father if he may return to the same school next year. In his own words, "It's a great school." And why should it not be so to him? Everything connected with it has been associated with *success;* that element in school work that is so vital to continued progress.

EDITORIALS

THE EVALUATION OF THE PRACTICES OF PROGRESSIVE EDUCATION

About thirty years ago J. M. Rice in an article published in the *Forum* made the point that "the new school of education has not had more than a general conception of what results it really desires to attain." This criticism of the "new education" of his day, as stated by Rice, is the criticism most frequently made to-day of the so-called "Progressive Movement" in Education. There have appeared from time to time many books and articles which described the theory of or experiments in Progressive Education but very few articles which attempt to give information on the results achieved.

It is altogether likely that our present methods of measurement may not be adapted for measuring many of the outcomes of instruction claimed for Progressive Education. It is therefore with a real appreciation of the type of methodology reported that the *Journal of Educational Research* has in this issue (p. 433) an article by Pistor in which is described a method of evaluating the results of an experiment in Progressive Education. The need of methods of measuring and evaluating what we now often regard as intangibles in education provides endless occasions in the field of measurement for what James Harvey Robinson once called "creative thinking." We need very much to know whether or not Progressive Education practices are in fact achieving the ends that are desired. It is possible that the Progressive schools may not be achieving the goals claimed for them.

LEO J. BRUECKNER

DO WE HAVE AN OBJECTIVE MEASURE OF SCHOOL INSTRUCTION?

Many evidences appear that our objective tests of attainment measure little more than the attainment in any of the subjects of study due to the advance of mental ability native to the pupil when living in the present school environment. This means that our objective tests under present school conditions have measured little more than growth in mental age and not the results of instruction due to the real work of education done by the schools.

When this fact was discovered some eight or ten years ago the inference then made was that the tests, while valid as covering the general range of subject matter instruction, were not valid as tests of the range of work possible to children of each mental age. To meet this limitation tests were organized to check this range of application of ability on subject matter for the difficulties met by each pupil. To illustrate from a language test, the exercises were arranged to include the application of each rule for language usage to every language situation. If the rule for capitalization covered five types of application an exercise for each was provided in the test and an individual class record sheet showed on just which types each pupil failed.

The evidence of range of ability to apply knowledge attained within the mental age ability, which was obtained from the use of such new type tests, seems at present, to change the inference first made that education extended beyond the measured mental ability. The inference which now seems valid is that the schools do not, in general, teach for breadth of knowledge at each mental level.

Both our research workers and our school directors are involved in this deficiency in our education. The research workers are at fault in not investigating the difficulties of the subject matter of each course for pupils at each mental age, especially for pupils of different mental age brought together in each school grade. They have also failed to investigate what arrangements of subject matter will correspond to mental power for thinking attained at each mental age. This statement assumes that different types of subject matter call for different types of thinking. The school directors are delinquent because they generally have side-stepped the responsibility entirely and have tried to hold the teacher responsible for sensing each pupil's difficulties. Without adequate organization of textbooks or of additional material needed to meet the need teachers are expected to find a way to educate as well as to train pupils.

Our educational psychologists are perhaps the most in need of awakening to the need of discovering what the human mind can do as it grows in ability to meet the requirements of social life between individuals and in civic action. In this situation the human mind tends to think for itself as it grows in mental power. Is it at all surprising that teachers cry for a progressive education that will help them even a little to meet the present situation?

G. A. B. By An Observer

REVIEWS

Address all communications relative to book reviews to Editor Kai Jensen, University of Wisconsin, Madison, Wisconsin.

BURTON, WILLIAM H. *Introduction to Education* (New York: D. Appleton-Century Company, 1934), pp. XIV + 833.

Introductory "surveys" have become increasingly popular during the past twenty-five years. In using the term "popular" we mean that they have become increasingly common in curricula for the professional education of teachers and other "educationists." Whether such survey courses are popular in the sense that they would be widely elected if they were not required is another question, and one suspects that the answer will be determined largely by the competence of the instructor who gives the course.

Thorndike is the father (or grandfather) of the textbooks prepared especially for survey courses. His "Education: A First Book," published in 1911, includes a remarkably comprehensive discussion, in very brief space, of most of the topics that are now recognized as appropriate for such a course. The present reviewer used Thorndike's book as one of the two basic texts in a course called "An Introduction to Education," which he offered at the University of Illinois at the time the book appeared and for several years thereafter.

In the strictly professional schools for teachers (the normal schools and, later, the teachers' colleges) the initial survey course came chiefly as a result of the Carnegie Foundation's "Suggested Curricula for the Preparation of Teachers" (1917) and "The Preparation of Teachers for American Public Schools" (1920). The Carnegie recommendations included provisions for differentiated curricula for kindergarten-primary teachers, intermediate-grade teachers, upper-grade and junior-high-school teachers, senior-high-school teachers, and rural-school teachers. It was recommended that the selection of a specialized curriculum by the prospective teacher be made more intelligent (or more clearly informed if one must use terms that avoid controversial issues) by an initial survey of the several teaching fields. Additional functions for the course were suggested by others. In 1924 two textbooks appeared almost simultaneously. These were followed by several others during the next few years.

In the liberal-arts colleges and in the universities, the introductory survey course has taken on a somewhat different character. It is frequently a substantial course covering the junior year and treating all or most of the recognized topics or units that may be listed under the generic term, "Education."

Dr. Burton's book is apparently intended for such a course. It is almost encyclopedic in its scope. At the same time it is well organized and the materials that are presented have been carefully selected in the light of a wide experience as a teacher and after a conscientious and thorough going study of the literature. Its chapters are classified under seven large headings: The Func-

tion and Aim of Education; The Method of Educational Thinking; The School System of the United States; The Materials of Instruction; The Curriculum; The Pupil Population; The Educative Process; Education as a Profession. The bibliographies appended to each chapter are exceptionally good.

In a field that bristles with controversial issues, Burton should be strongly commended for his fairness in presenting both sides or all sides as the case may be, and yet the reader usually has little doubt as to where the author believes the weight of the evidence to lie. This is especially marked in the discussion of nature *versus* nurture, generalization *versus* identical elements in the transfer of training, activities *versus* subject-matter, the origin of the eight-year elementary school in the United States, and the theory of Nordic supremacy.

Especially well done, in the present reviewer's judgment, are the sections (usually one for each unit) which deal with the historical development of educational theory and practice.

In a volume of more than 800 good-sized pages, it would be a miracle if no minor errors were found. Thus on page 428, the Committee on Economy of Time is referred to as a committee of the National Society for the Study of Education. It was a committee of the Department of Superintendence although its reports were published as yearbooks of the National Society. Among the directories of educational workers listed on page 710 one misses Cattell's *Leaders in Education*. The bibliography on professional ethics, page 718, does not include Dr. T. D. Martin's important monograph.

In general, Dr. Burton's book is a most useful as well as a highly authentic contribution.

WILLIAM C. BAGLEY
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COLEMAN, ALGERNON. *An Analytical Bibliography on Modern Language Teaching, 1927-1932.* Compiled for the Committee on Modern Language Teaching with the assistance of Agnes Jacques (Chicago: University of Chicago Press, 1933), pp. XIV + 296.

This valuable work brings up-to-date the bibliography of modern language methodology which was issued in 1928 as Volume VIII of the Publications of the American and Canadian Committees on Modern Languages.[1] These publications in eighteen volumes (1927-1931) contain the results of the Modern Foreign Language Study (sometimes popularly called "The Modern Language Survey"), sponsored by the American Council on Education and financed by the Carnegie Corporation. The same agencies aided the preparation of Professor Coleman's bibliography. Thus the Committee on Modern Language Teaching is in a sense the continuation of the American and Canadian Committees on Modern Languages.

Professor Coleman's work is admirably organized and arranged. The various books and articles listed are numbered from 1 to 570 to enable ready reference, and grouped under divisions with appropriate titles. These books and articles are critically analyzed in reviews extending from a few lines to a full page or more. Occasionally several titles of similar import or by the same author are grouped under one number. Thus the sum total of articles reviewed is considerably in excess of the 570 numbers. This is true of Numbers 45, 144, 209, 210, 222, 261, 439, 505, 527.

It is quite fitting that the first division of Coleman's work should analyze the

[1] Buchanan, Milton A., and Mac Phee, E. D., Compilers. *An Annotated Bibliography of Modern Language Methodology* (Toronto: University of Toronto Press, 1928), 428 pp.

Publications of the Modern Foreign Language Study and also the more important reviews of these publications. These publications represent the most extensive and scholarly study of the problems of modern language teaching ever attempted. They have attracted wide attention and, on the whole, most favorable comment in this country and abroad. Of the reviews listed the greater number deal with the so-called "Coleman Report" (Vol. XII of the Publications, *The Teaching of Modern Foreign Languages in the United States.* Macmillan Company, 1929, 299 pp.), since this volume provoked the liveliest discussion. This controversy centered around the question of extensive reading as the chief objective of foreign language study, and debated the ways and means of best attaining this objective. To the present reviewer Coleman seems very fair to all who took part in this discussion.

The second division (Nos. 39-58) is entitled "Psychology of Language Learning." Here we note the increasing interests which psychologists are giving to the problems of foreign language study, such as memorizing, recall, "associative formation," the reading processes, the acquisition of vocabulary, thought units, and like subjects.

Division three (Nos. 59-72), "General Trends in Language Teaching," includes a number of unpublished theses which record the results of experiments or of questionnaires undertaken as a result of the stimulus of the Modern Foreign Language Study. In other divisions of the book many further unpublished theses are likewise critically surveyed.

The largest division (Nos. 73-388) has the compound title "Aims, Materials and Methods." The works here discussed treat in general the actual problems of classroom instruction: objectives, phonetics and pronunciation, use of the phonograph and radio, the technique of reading, the acquisition of vocabulary (both words and idioms), what amount of grammar should be taught and how best to teach it, analysis of student errors, devices of various types for the several objectives of study, translation and comprehension, curriculum planning, the use of realia, etc., etc. This section will prove of most stimulus to the progressive teacher who would profit by the experience of skilled colleagues.

The next division, "Tests and Testing," (Nos. 389-491) reveals the great advance that has recently been made in the methods of testing the results of instruction. The rapid progress in the discarding of the old, subjective, essay type of examination in favor of the more objective and more accurate "new-type" tests is clearly apparent and effectively presented. Subdivisions of this topic are: "Techniques, Forms and Devices," "Attainment under Specific Conditions," "Tests of Specific Abilities" (aural and oral, vocabulary, grammar, comprehension and reading, literature and culture). There follow further subdivisions: "Prognosis," "Placement," "Sectioning and Individual Differences," "College Entrance Examinations." The section concludes with perhaps its most useful rubric: "Bibliography of Tests in the Modern Language Field" (by V. A. C. Henmon). Nos. 458-491 describe analytically, in respect to content, validity, reliability, and time required, the various tests that have been published up to 1932. References are also given to earlier numbers in the bibliography under which use of these tests has been described.

The concluding divisions are as follows: "Correlation and Transfer," Nos. 492-499, reviewing articles that discuss the values of Latin, English or a modern

foreign language in the study of another foreign language. "Training of Teachers," Nos. 500-509. "Language Teaching in European Schools," Nos. 510-532. "Miscellaneous," Nos. 533-570, subdivided into Bibliographical Aids, General Language, Post Scholastic Use of Foreign Languages, Student Opinion, and General Opinion of Foreign Language Teaching.

A six page Index of authors binds the bibliography together by referring to the numbers of the reviews. This important book should be in the library of every secondary school and college, as well as upon the shelves of all progressive teachers. It is to be hoped that at least every five years provisions should be made for similar successive volumes.

THOMAS EDWARD OLIVER
University of Illinois

KASUYA, YOSHI. *A Comparative Study of the Secondary Education of Girls in England, Germany, and the United States.* Contributions to Education, No. 566 (New York: Bureau of Publications, Teachers College, Columbia University, 1933), pp. X + 211.

Dr. Kasuya has sought to discover what suggestions for the improvement of the education of girls in Japan she could find from the experiences of three Western countries—England, Germany, and the United States. The effect of women's movements on school and college practices and privileges in these countries has been important. Japan's economic and imperialistic developments have followed rapidly those of the Western world, and the emergence of women's movements in Japan have likewise developed with similar recency. Educational and legal institutions and practices have not been quick to respond to the changed attitudes of and toward women. But they must do so. The final aim of this dissertation is to point the way along one line—the secondary education of girls.

She finds in each of the three countries whose secondary education for girls she studied that its peculiar spirit and form is clearly the resultant of historic social-economic conditions and their resulting traditions; for example, pioneer life and sex equality in America, the Hausfrau idea in Germany, and the somewhat non-intellectual sphere assigned women among the social elite of England. After setting forth the historical and social backgrounds of the education of girls and women and the development of the secondary education of girls, Dr. Kasuya examines the present tendencies and problems of such education in each of the three countries. Her factual report is authentic and her explanations in line with those generally accepted.

As in the cases of all other such explanations in which writers or speakers generalize from the status to the universal creeds or attitudes which are assumed to account for the status, the critical reader must be skeptical. That prejudices, beliefs, opinions, and even subtly conceived social schemes accepted by the privileged classes do appear in the pronouncements and conversation of teachers, labor leaders, bank clerks, and shop keepers is true. Even so, one may find in England and Germany, as in the United States, many non-conformists. Concerning these critics of the *status quo*, Dr. Kasuya seems somewhat innocent.

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RESEARCH ABSTRACTS and BIBLIOGRAPHIES

Address all communications relative to research abstracts and bibliographies to A. S. Barr, University of Wisconsin, Madison, Wisconsin.

BULLETINS

COCKING, WALTER D., AND OTHERS. "Report of the Tennessee Educational Commission: Part I, Facts Regarding Public Education and Resulting Problems: Part II, Recommendations Affecting Public Education in Tennessee" (Nashville, Tennessee: The Tennessee Educational Commission, 1934), Part I, XXX + 361; Part II, XIX + 130.

From a study of the population, health conditions, occupations, school facilities, etc., for the state of Tennessee The Tennessee Educational Commission offer recommendations concerning a number of the more important educational problems in the state of Tennessee: aims and objectives, curriculum; control, organization, administration, personnel, school finance, school plants and equipment, and many other similar problems related to the administration of public education in Tennessee.

GAUMNITZ, W. H. "Economies through the Elimination of Very Small Schools" (Washington: The United States Department of Interior, Office of Education, United States Government Printing Office, Number 3, 1934), V + 54 pp.

The author presents in this bulletin data relative to extremely small schools in the western states, central states, northeastern states, and in the southern states with suggested ways and means for eliminating the very small schools.

GATTO, FRANK M., AND OTHERS. "Supervision in the Pittsburgh Elementary Schools" (Pittsburgh, Pennsylvania: Pittsburgh Schools, IX, No. 2, November-December, 1934), 72 pp.

This issue of the *Pittsburgh Schools* is given over to a discussion of Supervision: problems of the elementary school principal, supervision in the Pittsburgh elementary schools, and bibliographic notes on supervision.

HOLY, T. C., "Ohio County High Schools in 1929-30 and 1933-34," *Educational Research Bulletin*, XIII, No. 9 (December 12, 1934), pp. 219-228.

The author presents a comparison of the types of organization and distribution according to enrollment of high schools in county school districts for the years, 1929-30 and 1933-34. Progress has been made in the elimination of the small high school.

KUIPERS, CORNELIUS C. "Preliminary Results of an Intelligence Test Based on Indian Culture" (Albuquerque, New Mexico: University of New Mexico Press, October, 1934), 8 pp.

A study of the intelligence of Indians and white subjects in Iowa and New Mexico from which the author concludes that the addition of an Indian culture in the ordinary intelligence test tends to minimize differences between Indians and whites test performance, and in which the Indians will do as well as or better than, whites.

LEPLEY, WILLIAM M. "Serial Reactions Considered as Conditioned Reactions" (Princeton, N. J., and Albany, N. Y.: Psychological Review Company, Psychological Monographs, XLVI, 1934), VII + 56 pages.

This monograph presents a series of Serial Learning and Forgetting based upon conditioned reflex principles. Biography.

MORPHET, EDGAR L., AND OTHERS. "The Equalization of Educational Opportunity in Alabama" *Bulletin: State Department of Education of Alabama*, Bulletin No. 13, 1934.

The author discusses in this bulletin the significance of equalization, the calculation of equalization funds, and suggested plans for determining minimum amounts which should be appropriated to city boards of education by county boards.

REMMERS, H. H. "Studies in Attitudes: A Contribution to Social-Psychological Research Methods" (LaFayette, Indiana: Purdue University, Division of Educational Reference, December, 1934), 109 pp. Bibliography.

This bulletin contains reports of several studies of attitudes: generalized attitude scale, a scale to measure attitudes toward any institution, a generalized scale designed to measure attitudes toward defined groups, a scale for measuring attitudes toward any home-making activity, etc. There are ten such papers all together. Bibliography.

SEARS, JESSE B., AND OTHERS. "School Administration in the Twentieth Century" (Stanford University, California: Stanford Pamphlets, Number 4, October 15, 1934), 83 pp.

This monograph presents five addresses on the subject of school administration given at Stanford University in honor of Professor Ellwood Patterson Cubberley, retiring Professor of Education and Dean of the School of Education at Stanford University.

SMITH, H. L., AND OTHERS. "Twenty-first Annual Conference on Educational Measurements," *Bulletin of the School of Education, Indiana University*, XI, No. 1, 93 pp.

This bulletin contains eleven papers upon various phases of education: measurements, curriculum, finance, etc., given by persons participating in the Twenty-first Annual Conference on Educational Measurements held at Indiana University, April 13 and 14, 1934.

UMSTATTD, JAMES G. "Supply and Demand of College Teachers" (Minneapolis, Minnesota: The University of Minnesota Press, January 9, 1934), 41 pp.

The author presents data relative to the supply of college teachers as follows: doctorates granted during 1931-32 and 1932-33, Masters degrees granted during 1931-32, staff reductions, reasons for reduction, salaries, registrants for college teaching positions, number of unplaced Doctors of Philosophy, and status of unplaced Doctors of Philosophy; data relative to the demand for college teachers: appointments, college calls, placements, nature of appointments, methods of contact, factors considered in selecting staff members, salaries, recent regulations pertaining to vacancies, change in student-staff member, ratio, and comparison of supply and demand in various fields.

WILSON, HOWARD E., AND OTHERS. *The Social Studies Curriculum*, (Philadelphia: The National Council for the

Social Studies, Fourth Yearbook, 1934), 205 pp. Bibliography.

This bulletin contains some fourteen papers on various aspects of the social studies curriculum: Needed revisions in social science instruction, critical considerations in curriculum-making, techniques of curriculum-making, the social studies curriculum in Denver, Des Moines, Tulsa, San Antonio, Germantown Friends School, Lincoln School, Pasadena, University of Chicago Laboratory Schools, and Reading, Massachusetts. Bibliography.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

SYMONDS, PERCIVAL M. "Human Drives" *Journal of Educational Psychology*, XXV (December, 1934) pp. 681 + 694.

The author presents a summary of theories and investigations relating to human drives and concludes by offering types or levels of driving forces or urges in the human being.

TINKER, MILES A. "Illumination and the Hygiene of Reading," *Journal of Educational Psychology*, XXV (December, 1934) pp. 669 + 680.

The author concludes from an experimental study of three aspects of illumination, namely, intensity, wave-length, and distribution of light that in ordinary reading a wide range of intensities may be employed without discomfort or fatigue although the speed of reading may become less at the lower intensities. If the distribution is adequate reading may be safely done under illuminations of from two to forty foot-candles. Bibliography.

METHODS OF INSTRUCTION

BRYSON, WILLIAM M., AND HUTSON, PERCIVAL W. "The General Curriculum," *The School Review*, XLIII (January, 1935), pp. 17-27.

The author presents data relating to the current variation and diversification of the curriculum concluding that in the general curriculum there has been developed an effective instrument for educational democratization.

HOEFER, CAROLYN, AND HARDY, MARTHA CRUMPTON. "Some Influences of Health-Education Program during the Elementary-School Years," *Elementary School Journal*, XXXV (January, 1935), pp. 368-382.

The authors present the results of a health education program carried on in the public schools of Joliet, Illinois. Data are given to show that the health status of pupils participating in the project was improved.

STONE, CLARENCE R. "The Second-Grade Reading Vocabulary," *Elementary School Journal*, XXXV (January, 1935), pp. 359-367.

The author presents a new vocabulary list based upon a study of the vocabulary of sixteen series of second readers.

CURRICULUM

LANE, HOWARD A., AND WITTY, PAUL A. "The Educational Attainment of Delinquent Boys," *Journal of Educational Psychology*, XXV (December, 1934), pp. 695-702.

From an analysis of educational and mental test scores for boys entering the St. Charles, Illinois, School for Boys the authors point to the significant role which educational retardation plays in the lives of delinquent boys. The low educational status of delinquent children being an important element in producing discontent, and a-social behavior.

RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Arkansas Studies. — Educational research at the University of Arkansas has, since its inauguration as a specific function in September, 1928, been directed by a faculty member of the College of Education having combined research and teaching responsibilities. Since September, 1929, the program has been under the direction of J. R. Gerberich.

Research in progress at the present time is largely at the college level, as a result of the necessity for curtailing expenditures following 1932. In addition to the annual service of administration of entrance tests to incoming freshmen and the coöperative construction of English and mathematics tests for the orientation testing program, studies have been made in a number of fields. Investigations now in progress include:

1. A comprehensive study of probation students in the different colleges of the University.

2. Two investigations of teaching method and classroom problems—a controlled study of laboratory technique in introductory physics, and a study of changes in attitudes toward economic questions during an introductory course in that subject.

3. Two investigations concerning student attitudes toward various aspects of examinations and student performance on final semester tests.

4. An investigation dealing with student use of the general and reserve libraries and with book circulations by departments and subject matter.

5. An analysis of certain mental and personality factors related to scholastic success in college.

6. A study of attitudes toward certain questions of newspaper policy and interest in various portions of the newspaper.

7. A study of junior college transfers to the University.

8. Two studies concerning use of and efficiency of the orientation program commonly known as "Freshman Week."

During the three-year period, 1929 to 1932, in addition to research at the college level, three types of coöperative projects were conducted in the public schools of Arkansas.

1. Regular consultation service for three public school systems engaged in curriculum revision at both the elementary and secondary school levels.

2. Coöperative research projects conducted in several city and county school systems of the state. These projects dealt with departmentalization, individualized instruction in arithmetic, and diagnosis and remediation of reading deficiencies.

3. Inauguration and direction of the Arkansas Educational Guidance Survey. Nearly twenty-five hundred seniors of approximately forty-five Arkansas high schools were tested shortly before graduation in the springs of 1930 and 1931 with three tests—psychological, English, and either foreign language or mathematics. On the basis of test scores and personnel data acquired from the re-

sponses to a brief questionnaire, advisory letters prepared by a faculty committee were sent to each graduate to inform him of his probabilities of success in college. A follow-up of the 1930 survey participants showed the test results to be highly predictive of success in Arkansas colleges.

Publication of the results of research has been in the form of articles in national educational journals and in the state educational organ, and in mimeographed reports summarizing the findings in a semi-technical style (circulated to a limited mailing list). A general indication is given below of the major fields among which the thirty-three mimeographed reports are distributed. A number of the subjects listed were also dealt with in periodical articles.

1. Administrative—class size in economics, sectioning of classes in mathematics, and prediction of general and specific scholastic success.

2. Teaching method and classroom problems—individualized instruction in physics, lecture versus discussion method in American National Government, requirement of problems in engineering mechanics, teaching method in graphic methods and in two courses in home economics, and attitudes of sociology students toward certain questions of a sociological nature.

3. Student personnel—fraternity and sorority scholarship, persistence and elimination of engineering students, and scholarship and persistence of students in all colleges of the University.

4. Reading—special "Reading and Methods of Study" course, optional and required reading of college students, and reading interests and actual reading of education students.

5. Arkansas Educational Guidance Survey—annual reports, follow up study of college entrance, and prognostic value of tests for college scholarship.

A limited number of many of the mimeographed reports are available for distribution to interested readers.

Columbia Projects—Current research projects in the Institute of School Experimentation, Teachers College, Columbia University, have been reported by the director, O. W. Caldwell, as follows: J. W. Wrightstone, Research Associate, is continuing his work on "Appraisal of Experimental and Conventional Public School Practices." After completing a two-year investigation of a small number of so-called progressive as compared with conventional school curricula, he is now starting another two-year program, extending the study to other schools. The major aspects of this investigation are: (1) to describe curricular practices commonly found in schools called experimental, progressive, activity, or newer-type; (2) to devise new instruments for measurement of intellectual, dynamic, and social-performance factors; and (3) to formulate the implications of the results for school practices in general.

The curricular practices of experimental public schools used in this investigation have been described. A monograph, which contains statistical data on measurements of educational outcomes from kindergarten to the end of high school, is almost ready for publication. Intellectual factors, such as informational skills, knowledge, and habits, have been measured by standard tests. Dynamic factors, such as civic attitudes, science beliefs, and personal and social adjustments have been measured mainly by newly devised tests. Social performance factors such as initiative, responsibility, and coöperation, have been measured by specially devised techniques of controlled observation.

Future plans include the construction of new tests to measure: (1) intellectual factors, such as ability to formulate generalizations and ability to use the scientific method; (2) dynamic factors of attitudes and appreciations; and (3) social-performance factors, such as leadership, industry, and dependability.

J. B. Maller, Research Associate in this Institute, is making an extensive study of the variation of progress and achievement in the 571 elementary public schools of New York City. The rates of progress are being correlated with various measures of the social-economic conditions of the neighborhoods where the respective schools are located. The study reveals enormous differences among schools with regard to every aspect of scholastic progress. Thus, the percentage of retarded pupils is found to range from 5 to 50. Similarly, the percentage of accelerated pupils ranges from 3 to 35. The correlations with neighborhood factors reveal that school progress correlates positively with economic status, and negatively with the rate of juvenile delinquency, rate of infant mortality, birth rate, death rate, and proportionate amount of charitable relief received in the neighborhood. The variation of school progress among the neighborhoods of the city is also presented graphically in a series of maps. Sections of this study were published in the *Teachers College Record* for May, 1933, and the *Psychological Clinic* for June-August, 1933.

The study of delinquency, which has been going on for sometime, is being continued with particular reference to the character of juvenile and adult delinquents. The juvenile delinquency rate in New York City for 1933 is being computed by health areas. Correlations between juvenile delinquency and other factors (scholastic, social, physical, and cultural) are being computed. Additional data, including such factors as illiteracy, library circulation, radio and telephone statistics, and religious organizations are being computed for each health area in the city.

Iowa Child Welfare Research. — Research in child development at the Iowa Child Welfare Research Station, State University of Iowa, during 1933-1934 was conducted in the following fields: (1) nutrition, (2) anthropometry and physical growth, (3) child psychology, (4) preschool education, (5) parent education, (6) character education, and (7) coöperative projects. Many of the studies completed or in progress during the year are listed in the November, 1933, number of this department.

1. Research in nutrition has been a continuation of the work of previous years in which both animals and children have been used as subjects—the former, as a means of determining food composition and the physiologic effect of deficiencies, and the latter, in studies pertaining to the amounts of essential food constituents needed by children of various ages.

The studies with children in the metabolism ward lead to the belief that many children are inadequately nourished. This is shown by the fact that the majority of the children retained more of the essential food constituents when they first came to the ward for study than during subsequent periods. This year, in order to overcome in so far as possible the influences of undernutrition in some of the children in our studies of previous years, longer preperiods have been used in the metabolism studies as well as longer periods during the study. Thus the total number of children studied during the

year has been fewer than during previous years. Results, however, suggest that in order to know how children grow, studies should be made with children who previously have been adequately fed and not with the so-called "average" child, since the average reflects the lack of nutritional knowledge together with the economic status of the group, and therefore may not give a picture of the physically fit child.

Among the studies of the past year, the following are cited as typical examples: "A Study of Manganese Retentions in Children" and "A Study of the Vitamin B Content of the Diets of Children in Relation to Their Vitamin B Needs."

2. In the field of anthropometry and physical growth, this year has been spent largely upon the refining of several relatively long-time problems. Progress has been made upon the development of a school program of applied anthropometry. A manual for this program, together with complete standards, will be available during the year.

Typical studies are: "X-ray Technic for Children," "Individual Differences in the Structure of the Pelvis and Lumbar Spine as a Factor in Body Mechanics," and "The Analysis of Measurements of the Skull by the Factor Analysis Technique."

3. Studies on general aspects of child psychology include the textbook by Professors Wellman and Stoddard, *Child Psychology*, and an article by the same authors, "Methods of Research in Child Psychology," in the February, 1934, *Review of Educational Research*.

Typical studies in the field of mental development are: "The Use of Conditioning Techniques in the Study of Form Discrimination of Young Children," "A Comparative Study of Variability on Intelligence Tests and Educational Achievement Tests," and "The Prediction of Later Intellectual Status from Performance Tests Given at the Preschool Ages."

A new study in the field of motor development is one of "Handedness."

Examples of studies in personality and social development are: "The Validity of Report of Delinquents on Personal Questionnaires" and "Motivation of Young Children."

Some of the current problems which are being conducted with newborn infants are: "Plantar Responses in Infants," "The Effect of Darkness on the Activity of Newborn Infants," "Pupillary Responses in Infants," and "Motion Picture Studies on the Development of Reaction Patterns during Infancy."

4. *A Manual of Nursery School Practice* was published in April, 1934. Already the demand for the manual has been such as to lead to its reprinting.

Typical problems in preschool education are: "Susceptibility of Nursery School Children to Certain Communicable Diseases," "The Attendance of Nursery School Children," and "A Brief History of Nursery Education."

5. The studies of parent education completed during the past year, dealing with objectives and needs, indicate that the method of investigation is reliable and adaptable to a wide variety of materials. It appears that techniques are being developed which make it possible to deal effectively with many of the problems confronting curriculum makers.

Among the studies in progress are: (a) the needs of college students, (b) the needs of parents of preschool-age children as related to physical, mental, emotional, motor, and social development of the child, and (c) the needs of parents as related to nutrition.

For studies in the development of measuring instruments, three compre-

hensive batteries of knowledge tests were developed, two in connection with needs of parents and one in the training of lay leaders. Knowledge tests were designed to measure the ability of preschool parents to apply important generalizations relative to play, eating, sleep, and elimination. Tests for measuring attitudes toward petting, smoking, dancing, and social conformance were prepared.

The contributions of studies of the effectiveness of programs of learning are twofold: they furnish data on the effectiveness of programs based on what is known concerning the learning process in parents, and they extend knowledge relative to the process itself.

Studies of home environment and family life are characterized by the development of methods of reducing the large probable error of observation extant in many investigations in this field. Such a concept as "family relationships" must be reduced to more precise description and study.

6. Typical studies in character education conducted at the Station during 1933-1934 are: "The Philippine Islands in American School Textbooks" and "Teachers' Attitudes in Relation to Classroom Morale and Cheating."

7. Coöperative studies involving other departments are: "Legislation Pertaining to Women and Children in Iowa" and "An Experimental Induction of Art Appreciation in Children."

Special Education in Massachusetts, 1933-34.—A survey was made early in the year to determine the cost of special types of education, as compared with the education of the normal child in the public school. The average cost per child in Massachusetts in all public schools for 1933 was $90.44. In the classes for children retarded three years in mental development it was found that there were 554 classes with an enrollment of 8,840 children, the average cost per child being $130, and the size of the classes varying from groups of ten and under, up to eleven to fifteen, and sixteen to eighteen pupils inclusive. In the 1-10 pupil group there were sixteen classes; in the 11-15 pupil group sixty-six classes; and in the 16-18 pupil group seventy-one classes. The cost was not as much in excess of the average cost per pupil as had been anticipated.

A new type of education for Massachusetts was instituted on a state-wide basis in Massachusetts in 1930. This was the education of physically handicapped children in their homes. During 1933-34 there were 598 children receiving such instruction at an average cost of $100.33. The number of periods per child per week varies in different localities, but on an average every child had at least two hours of instruction per week and it was interesting to note that the majority of them were able to complete work equivalent to a full year in a grade.

Lip reading was made available to 1,212 children during the year. The educational cost over and above the average cost per pupil for public school education varied from $6.00 to $60.00 per pupil, averaging about $16.00 per child.

Day classes for the deaf are maintained in four Massachusetts cities—Lynn, New Bedford, Springfield, and Worcester. In these schools, during the past year, sixty-seven pupils were taught by six teachers. The cost of this instruction was $12,238.99, which makes the per pupil cost $182.67.

Contrary to expectation, the cost of all four types of special education studied, as compared with the cost of normal education, is appreciably low. With the results as given, it is hoped that there will

be a considerable extension of this type of service throughout the state.

A. B. Lord is State Supervisor of Special Schools and Classes.

Research in Progress at the Merrill-Palmer School.—Research in progress at the Merrill-Palmer School, Detroit, concerns various phases of child development from infancy to adolescence, and a number of other studies related to the program of the school.

An experimental project carried on in recent months has been an assembling and integration of all the data, qualitative and quantitative, available on a single child. The child studied is one of about fifty children for whom the School has similar records. These cover the time from infancy to preadolescence. The child and the family have been known to the School from the time of the child's entrance into the nursery school at 21 months to the present, when she is enrolled in the recreational clubs and is about 8½ years old. The data are analyzed under the periods of infancy, nursery school years, and preadolescence; and, in the two latter periods, under physical, mental, and personality and character traits. In this project one of the chief problems has been that of finding a satisfactory method of integrating the data. The investigation has been useful in showing the values and shortcomings of the records. Aside from its value in revealing the extent to which a picture of the "whole child" can be gained from records covering many traits, the study demonstrates that it is impossible to isolate simple causative factors in the total development of the child, and that such studies are too time-consuming and expensive to be carried out on a large scale.

Data are being collected in connection with the prenatal and infant service, and though their chief purpose at present is to serve as a basis for guidance to the mothers registered and for teaching materials, it is probable that they will supply materials for research as they accumulate.

Studies are in progress on the reliability of the Merrill-Palmer scale of mental tests and on the development and rating of personality in young children. Data have been collected for a study of factors affecting changes in I.Q. The School has coöperated in contributing part of the data for an investigation of the religious education of young children, sponsored by the National Council of the Protestant Episcopal Church, which is now preparing a report of the findings. The church school classes from which the data were obtained are being continued and may yield further material for studies in this field. Further investigation has been made of the method of rating the activity of young children and its relation to such factors as age, health, and environmental factors, but the results are not yet ready for publication. A study of the visual acuity of preschool children is projected.

The interests of preadolescent children are being studied in connection with the work of the recreational clubs, organized to bring back to the School children who have attended the nursery school. Other investigations in progress with these children concern leadership, modesty, social-sex development, and ego ideals. Students have undertaken studies of the interest and ability in dramatics of children of different ages, and of the extent to which training in a specific habit (neatness in the bathroom), carried on at the club meetings, carries over to the home. A rating scale for camp counselors has been devised in connection

with the Merrill-Palmer Camp, but has not been standardized.

Further study is being made of a method of recording posture. Results so far indicate that the method is more satisfactory with preadolescent children than with younger ones, and that better results are obtained by taking the average of several photographs than by judging on the basis of one. Since the present photographic procedure is too expensive to permit making a series of each subject, another method must be sought. The data on posture are expected to afford material for several studies.

In connection with the Advisory Service for College Women, established in 1932, studies of early marriage adjustments and the adjustments of college-trained women to modern life are in progress.

Investigations of the European background and development in this country of various nationality groups resident in the United States have been completed, under the auspices of the School and the Detroit Public Library, and are now being prepared for publication.

Research Division, N. E. A.—The first third of the 20th century has been marked by changes in social and economic conditions, which have created problems of great variety and complexity. In order to help teachers to familiarize themselves with the basic facts concerning social change, and the various proposals that have been made to improve both social conditions and the educational program, the Research Division of the National Education Association has issued a 40-page bulletin which reviews modern social and educational trends (*Research Bulletin*, Vol. 12, No. 5, November, 1934). In each of seventeen areas of social life—population, health and vitality, home and family life, position of woman, economic organization, labor conditions, occupations, wealth and income, invention and discovery, communication, transportation, government, crime and punishment, public finance, natural wealth, leisure-time activities, religion—a summary of trends and conditions is accompanied by pictorial charts, and followed by a discussion of educational implications. The bulletin concludes with a generalized statement of needed educational adjustments to a changing civilization.

The social and industrial changes which have taken place in recent years have complicated the problems of human conduct. Accordingly, increased responsibility for moral education has been placed upon the school. Two bulletins of the Research Division deal with education for character (*Research Bulletin*, Vol. 12, Nos. 2 and 3, March and May, 1934.) Part I discusses the social and psychological background for a program of character education. Part II outlines a program for building character through the curriculum, through individual guidance, and through school and classroom administration.

In recent years many national agencies have made searching analyses of various phases of education. The September *Research Bulletin* lists national deliberative committees which have reported or which are now at work on important educational topics (Vol. 12, No. 4, September, 1934).

A compilation of pertinent data on federal aid to public schools has been issued as a 16-page pamphlet under the title *Emergency Federal Aid for Education: A Review of the Evidence.*

The Research Division has continued to coöperate in an editorial and consultative capacity with regard to the pub-

lications of certain departments of the National Education Association. Current issues of the *Review of Educational Research* published by the American Educational Research Association comprise these titles:

1. "The Curriculum," Vol. 4, No. 2, April, 1934.

2. "Teacher Personnel," Vol. 4, No. 3, June, 1934.

3. "School Organization," Vol. 4, No. 4, October, 1934.

The Thirteenth Yearbook of the Department of Elementary School Principals deals with the provision and use of aids to teaching (*Aids to Teaching in the Elementary School*, National Elementary Principal, Vol. 13, No. 5, June, 1934.) Topics discussed include pictorial and graphic aids, object materials, field trips, slides, motion pictures, and radio and sound equipment.

The Educational Research Service, maintained by the Research Division and the Department of Superintendence, has issued these circulars since April 1, 1934:

1. "Education Discussed in Lay Magazines," Circulars Nos. 3, 6, and 9, 1934. These three summaries of articles in non-educational magazines cover the period from December 1, 1933, to October, 1934.

2. "New Developments in Pupil Report Cards," Circular No. 4, May, 1934. Part I discusses principles and practices based on a study of sample report cards and the findings of other writers. Part II consists of photographic reproductions of sample forms.

3. "State School Legislation, 1933," Circular No. 5, May, 1934. This circular is a digest of legislation arranged according to nine topics.

4. "Teacher Sick Leave; Holidays; Salary Deductions for Absence," Circular No. 7, September, 1934. Replies to a questionnaire from thirty-nine cities over 200,000 in population show prevailing practices regarding sick leave and salary deductions for absence.

5. "School and City Current Expenses Compared, 1932; 94 Cities above 100,000 in Population," Circular No. 8, September, 1934.

6. "Questionnaire Studies Completed—Bibliography No. 5, 1933-34," Circular No. 10, October, 1934. The list of forty-two studies presented in this circular is based on questionnaires submitted to city and state superintendents of schools.

7. "Salary Schedules for Teachers, 1934-35; Sixty Cities over 100,000 in Population," Circular No. 11, November, 1934.

Syracuse Studies.—Under the supervision of the Bureau of Educational Research, Syracuse University, psychological and reading examinations were administered to approximately 1450 students in residence. The Ohio State Psychological Examination, Form 17, was used. Various scores were computed and furnished to all deans, and on proper request to any others qualified to use them.

Diagnostic reading tests were administered to approximately 50 deficient first year students. Remedial work was outlined on the basis of results secured on these tests.

Reading and psychological examinations were also administered under the direction of this Bureau to 464 students in the Collegiate Centers conducted under the T.E.R.A. and to 90 students in the Undergraduate Centers conducted by the School of Extension Teaching and Adult Education of Syracuse University. The same test was used in these centers that was used on the campus. Scores were computed and furnished to the various centers and to interested individuals.

With the F.E.R.A. help furnished this Bureau, two studies were inaugurated. One, an elaborate study of the scores of the 1932 first year group on the Iowa Silent Reading Test, was completed and the results compiled in a mimeographed pamphlet entitled, *How Well Do Syracuse University Freshmen Read?* Bulletin, 1933, No. 3, Bureau of Educational Research.

A second investigation was initiated but not completed. This study is an appraisal of the predictive value of the Ohio State Psychological Examinations and the Regents marks singly, and in combination, in the various schools and colleges of Syracuse University.

Harry P. Smith is Director of the Bureau of Educational Research.

Houston, Texas, Projects.—A study of achievement in punctuation, capitalization, and language practice is being made from the fifth through the ninth grades. Since Houston has an eleven-year system, this includes the last year of elementary school, three years of junior high school, and the first year of senior high school. The purposes of this study are to ascertain: the extent to which these skills are achieved in the respective grades, to what extent there is progression in achievement from grade to grade, and the effect of special language-practice drills used in junior high school. The results of this analysis should have very direct bearing on the curriculum and the methods of teaching at the various levels. Very little formal grammar is taught in the elementary school in this system. Considerable attention is given to it, however, in the special drills in junior high school and in senior high school. English teachers lay great stress upon the teaching of formal grammar. This is a problem of long standing and is in all probability common to most school systems.

Another project under way is the preparation of a test on the fundamental operations in arithmetic. This test is being prepared primarily to assist in further analysis of achievement in this field in the elementary and junior high schools.

In the field of curriculum work a course in general mathematics for the eighth grade is being prepared in the form of student workbooks. The content is being organized around modern problems in economics. The underlying purpose of this course is to provide opportunities for the use of mathematics while securing a better understanding of real life problems. The content itself is real, vital, and in itself justifiable. Instead of using as content any sort of vehicle through which arithmetic may be learned, arithmetic is utilized as it is needed to enable better comprehension of real problems. In other words, arithmetic is taught not as a skill by itself, but as a means for the better comprehension of problems involving quantitative relationships. This work has just begun, with several units tentatively in use. An attempt will be made to evaluate the effect of the general content of this course. No attempt has been made to include the usual combination of algebra, geometry, trigonometry, etc., which in many textbooks is presented as general mathematics. For this reason the term "general mathematics" may be technically incorrect, and instead, the term "mathematics for social usage" might be more applicable. It is planned to extend this type of general mathematics throughout the eighth and ninth grades of the Houston school system.

Perhaps the most interesting project lies in the field of curriculum revision on the college level. The University of

Houston, an institution offering four years of college work, is operated by the local board of education. This past September a General College was established, offering freshman and sophomore work organized in general courses. The major purposes of the General College are to provide more ample opportunities for students to learn about the world in which they are living and to adjust the college curriculum more closely to the needs of individual students. The work is being presented at this time in four general courses in the fields of social studies, physical sciences, biological sciences, and language and fine arts. The syllabi are being prepared with two aims in mind: first, to give the students an outline to help them organize their study, and second, to stimulate interest in the problems. An attempt is being made to organize all materials in these four general courses around major problems. The outcome of this work will be compared with the results achieved by students following the traditional college plan. Since the materials in use are produced in quite limited numbers and are in only tentative form, they are not available for distribution.

Administrative research projects are undertaken as needed to supply information. A study of the school-building needs was recently made in contemplation of the budget for the coming fiscal year. With the improvement in the financial condition of the city, the outlook for opportunities for better research is quite promising.

W. W. Kemmerer is Director of Child Accounting and Curriculum.

Teacher Placement Organization.—Teacher placement officials of Mid-Western colleges and universities met at the University of Chicago, December 1, 1934. Plans were laid for the permanent organization of The National Institutional Teacher Placement Association. The first annual meeting of this group will be held in Atlantic City, February 23-25, 1935, at the time of the N.E.A. meeting of the Department of Superintendence. The president of the new organization is L. W. Williams of the University of Illinois and the secretary-treasurer is Pauline Botty, State Teachers College, Buffalo, New York. The annual dues are one dollar.

The purposes of the organization are as follows:

1. To foster coöperation between institutional placement officials.

2. To encourage research looking toward an improved technique of teacher placement.

3. To facilitate distribution of available information on practices, problems, and results of teacher placement in various institutions.

4. To foster, through united action, the idea that school officials can contribute to the profession by employing teachers through institutional teacher placement offices whenever possible.

5. To foster high standards of ethics in teacher placement.

It is expected that within a year each state will have an organization of institutional teacher placement officials perfected and affiliated with the national group.

Philadelphia Research Projects.—Research activity in the Philadelphia schools has been directed toward the improvement of instruction through its thoroughgoing adjustment to the capacities and needs of pupils in groups and as individuals. Testing programs have emphasized early-term and in-term diagnosis. Materials for practice and remedial drill are

so organized as to encourage appropriately differentiated treatment of widely varying difficulties and needs.

Early-term diagnosis in the elementary grades has been applied in arithmetic, reading, and handwriting with incidental supplementary analyses where these are shown to be desirable. In the secondary schools, pre-testing programs in geometry, chemistry, modern history, and American history have emphasized basic skills in reading and vocabulary as well as subject matter. Throughout the grades, pupil achievement in school subjects is evaluated in terms of measured ability. To aid in securing this measure, the Philadelphia Mental Ability Tests have been developed at three levels with IQ tables so calibrated as to preserve the constancy of the IQ at different chronological ages. For large groups of pupils, average intelligence scores are combined with age grade data to produce an achievement expectancy index which serves as a point of reference for interpreting and evaluating the achievements of pupils in schools or classes. For individual pupils there is a so-called "ability correction" which tends at the same time to avoid over-stimulation and to insure against the development of habits of laziness.

The development and extension of provisions for individual differences in secondary schools has been a project of the Division in coöperation with teachers and principals. A recent survey of provisions for individual differences (Bulletin 327) shows the percentages of Philadelphia secondary school teachers who use each of a long list of individualization devices for application within the teaching group. The report concludes as follows: "Provisions for individual differences are applied by nearly all teachers in at least a part of their teaching. The use of ability grouping by subject and of a number of individualization devices within classrooms has more than doubled within the past three years. This is gratifying evidence of commendable professional spirit on the part of teachers in seeking to adjust the content and methods of their instruction to the changing capacities and needs of their students."

Objective test construction in Philadelphia is a coöperative project involving specific interpretation of course of study requirements and concise differentiation of objectives. General tests in silent reading have been supplemented by the development of tests in specific study skills such as the use of the index and dictionary, the interpretation of maps, tables, and diagrams, and the analysis of basic skills in outlining.

In coöperation with the State Department of Public Instruction the city is launching an Inventory of Oncoming Youth, the underlying purpose of which is to differentiate the experiences, background, capacities, interests, and present status of youth who passed through the sixth grade of the Philadelphia schools eight years ago and six years ago. The survey contemplates the accumulation for each individual of exact data relative to school achievement, social and economic background, character qualities, vocational choice, present occupation, and the adequacy of training.

Research activity in Philadelphia is eminently practical. It is recognized that the contribution of research to the realization of the purposes of the school system must be made in the classroom through the daily activities of teachers and pupils. An ability to recognize significant problems, a command of scientific procedure in assembling and studying data, a desire to experiment in prac-

tical situations and to verify conclusions —these constitute the research attitude, the foremost quality of a successful progressive teacher.

Philip A. Boyer is director of educational research in Philadelphia.

Ability Grouping in Memphis (Tennessee).—Six years ago retardation had reached alarming proportions in the Memphis schools. Instead of semiannual promotion and heterogeneous grouping, it was decided to change to annual promotion and to classify pupils in ability groups. At present all children below the junior high school level are given an achievement test in May, administered by a limited number of trained workers. The tests are interchanged among the several schools since no school scores its own tests. After the tests have been scored by one teacher and checked by another, they are sent to the central office and checked the second time. After the second check is completed typewritten lists of all children by schools and grades are made, listing the pupils from the highest score to the lowest total score. One copy is sent to each school and a copy kept in the central office. In September the principal arranges his pupils in ability groups according to the test results. For example, if there were 110 pupils in a given fourth grade, the pupils would be divided in three teaching units. The unit representing the highest total scores would be labeled 4-A, the second unit, 4-2A, and the third unit, 4-3A. The 4-A unit would be assigned about 42 pupils, the 4-2A about 36 pupils, and the 4-3A about 32 pupils.

This classification procedure has accomplished excellent results in the schools. The over-aged problem child has practically disappeared, and all the children seem happier. The attendance problem has been largely solved and the quality of work done in the schools has improved beyond expectations. The school system is gradually adjusting the course of study to the different ability levels, with an enriched curriculum for the "A" sections, while the slow sections are not required to do all the work outlined for the average sections.

This scheme of grouping extends through junior high school and into the senior high school in certain subjects, although the program in the senior high school is such that it is not possible, at present, to follow a strict classification program.

The teachers have accepted the challenge presented by the classification program. Many of them adjusted their teaching technique to the ability level of their group within a comparatively short time. Many teachers have accomplished far more with the slow-moving groups than was anticipated, while the pupils in the fast-moving sections have launched out into new fields of endeavor far beyond the bounds set by the accepted standards of the former heterogeneous groups.

At the beginning of school in September each teacher has the record sheet for every child in her room, showing the pupil's relative position, by subjects, on the basis of achievement. A program of remedial work is going on throughout the school year. Comparative data, showing the relative standing of the several schools by grades and by subjects, are sent to the principals who use this material in faculty meetings to stimulate teachers to more effective work.

K. W. Warden is director of research and attendance.

Peabody Studies (Tennessee).—The work of the Division of Surveys and Field Studies of George Peabody College for Teachers falls roughly into two major divisions. The term "survey" covers the general field service of the Division which deals with specific needs of given schools or school systems. The term "field studies" includes that part of the program which involves problems common to many school systems. The major energies of the Division are devoted to practical field service, but as problems arise in field work which call for special study and research, members of the staff undertake such investigations. Seven of these studies have been published in monograph form. At the present time the Division is engaged in the projects described below.

At the request of the Southern Association, a study is being made of teacher training in all the higher institutions of the Association. This investigation, under the general supervision of a special committee of the Association, was initiated in the spring of 1934 and will be reported to the Association at its 1935 meeting.

The Division has been assisting the State Department of Education in Virginia with the development of a state curriculum program. The work is now entering the fourth year. Last year experimental editions of courses of study were tried out in selected schools. During the summer the material was revised and this year the new courses are being introduced on a statewide basis. These courses represent the development of a new type of course of study.

The State of Arkansas is entering the second year of a program designed to unify and organize the efforts of all forces in the state affecting instruction. The Division is aiding with the general development of the work. Special attention is being given, through intensive work by small selected committees, to problems of general significance for instruction in all schools in the state.

The Division is aiding Mississippi and Tennessee in the inauguration of state programs for the improvement of instruction. In Tennessee selected schools are being employed as experimental centers from which the work will be extended. In Mississippi, selected committees are undertaking the detailed aspects of the work, while all schools are being afforded opportunity to participate in the general phases of the work from the outset.

Since the Division is assisting in a number of curriculum programs, various studies are undertaken from time to time to aid committees in these programs. An analytical study of methods of defining the scope of the curriculum and the influence exerted on courses of study by these various methods is receiving emphasis at the present time.

In 1929 the Southern Association of Colleges for Women entered upon a coöperative curriculum study, and a member of the Division became consultant. A number of studies have been made in connection with this work. At the present time committees have been appointed in the participating institutions and are at work reorganizing curriculums. The Division acts as a clearing house for the activities of the committees and assists in special studies.

A study is projected dealing with the influence of various progress policies on pupil achievement. This investigation represents an extension of the work reported in a monograph of the Division entitled, *Non-Promotion in Elementary Schools.*

The Division is coöperating in the reorganization of the educational programs of three higher institutions. This work is done on a consultative basis.

Texas Investigations (State Board).—In accordance with the provisions of the Act creating it, the State Board of Education is making a follow-up study of the state supported institutions of higher learning, and is beginning a series of studies of the public school situation.

Data collected from the institutions of higher learning for 1932-33 and 1933-34, coupled with those used in the initial study two years ago, form the basis of this study. Data assembled from the institutions this year have been reported in accordance with the recommendation of the National Committee on Standard Reports for Higher Education; this includes both student personnel and financial data. In the study, attention is centered on those factors relating to and assisting in determining the extent of departmental offerings; on the distribution of classes according to size at each of the three levels, namely, lower, upper, and graduate; and on departmental loads expressed in semester credit-hour registrations for each of the three levels. Departmental instructional costs, including salaries and wages, and corresponding departmental loads form the basis for determining the respective departmental costs per semester credit-hour. The report of this study is to be available for distribution in January, 1935.

Studies of the public school situation include the factors of school support, teaching personnel, secondary education, and possibilities for reorganization of administrative units. The initial step in this program consists of the study of a number of representative counties to determine the possibilities for reorganization of administrative units. This has necessitated the collection of many pertinent facts revealing, first, the existing educational situation, and second, the possibility, through the findings revealed by these data, of a more logical and efficient administrative set-up. At the time of this writing, the studies of twenty-five of more than sixty counties have been completed.

An effort is being made to use as the basis for study school-support data covering at least three and possibly four years, with the hope that such information will present rather forcibly the facts of retrenchments in relation to pupil-teacher loads, salary levels, etc. In connection with this investigation, data revealing the existing situation in school offerings at the secondary level will form the basis of determining, at least in counties being studied, the distribution of high school offerings, with the hope that better provisions may be made for the thousands of pupils now receiving high school training in one, two, and three-teacher schools, and yet living in close proximity to a high school unit actually offering in an acceptable manner such training.

Although effort is centered on the aforementioned projects, a careful and rather detailed study of the teaching personnel of the public schools has been started. Factors to receive special attention are those relating to training, assignments of work as related to training, salaries and salary levels, experience, tenure, etc.

The work of the Texas Curriculum Revision Program was described in the November number of this department.

H. F. Alves is the representative of the State Board of Education who is participating in the studies described above.

Texas Studies (University).—The Bureau of School Inquiry in the Division of Extension of the University of Texas was established by the Board of Regents for the purpose of making practical studies and surveys of public schools in Texas. Surveys are made upon invitation of the superintendent of schools and the board of education. All expenses, including the cost of printing the report, are borne by the school board. The work is done by the two members of the extension staff who are also members of the faculty of the School of Education and by other members of the School of Education faculty.

The work of the Division of Extension does not end when the report is made and the results are printed, but an effort is made to follow up the findings and recommendations with expert service from the University in dealing with the problems revealed by the study. In several instances during the last few years this has taken the form of a course, closely related to the problems that are uppermost, offered in the community, for example, curriculum revision, supervision, or problems of organization and administration. In several instances, the entire teaching and administrative staff have met periodically throughout the year for discussion of problems under the leadership of a professor from the University. Those desiring credit for the course meet for extra periods to make up the time in hours required.

Surveys have been conducted in five towns and cities, including San Antonio, Galveston, and Laredo, and in each case follow-up programs have been carried out. The San Antonio study was confined to the building needs of the senior high schools, following which the new Jefferson High School was erected in the portion of the city where high school facilities were needed, as shown by the survey.

The board of education of the City of San Antonio recently has asked the Bureau to conduct a complete building survey of the city, including the sixty elementary schools, the junior high schools, and the senior high schools. This will involve a complete check up as to adequacy of building accommodations at the three levels, a study of population trends of various racial groups, a study of the financial resources of the city, and, on the basis of the facts secured, an attempt to forecast the building needs and the proper location of new buildings for five or ten years to come.

The results of the study, when made, will be printed as a bulletin of the University of Texas. It is expected that the survey will be completed and the report published by early summer.

T. H. Shelby is director of the Bureau of School Inquiry.

Bellingham Studies (Washington).—The Bureau of Research of the State Normal School at Bellingham, Washington, has nineteen studies or reports which are in the process of completion. These nineteen studies may be classified under four general headings: (A) survey or routine studies, (B) studies to aid in prediction and guidance, (C) curricular studies, (D) studies designed to improve measuring instruments.

A. Survey studies.

1. An analysis of the achievement and mental test results of all children in the Training School.
2. An analysis of the tests given during September and October, 1934, to all first, second, fourth, and seventh grades in the Bellingham city schools.

3. An analysis of errors made by city school teachers in scoring the Kuhlmann-Anderson Intelligence tests.

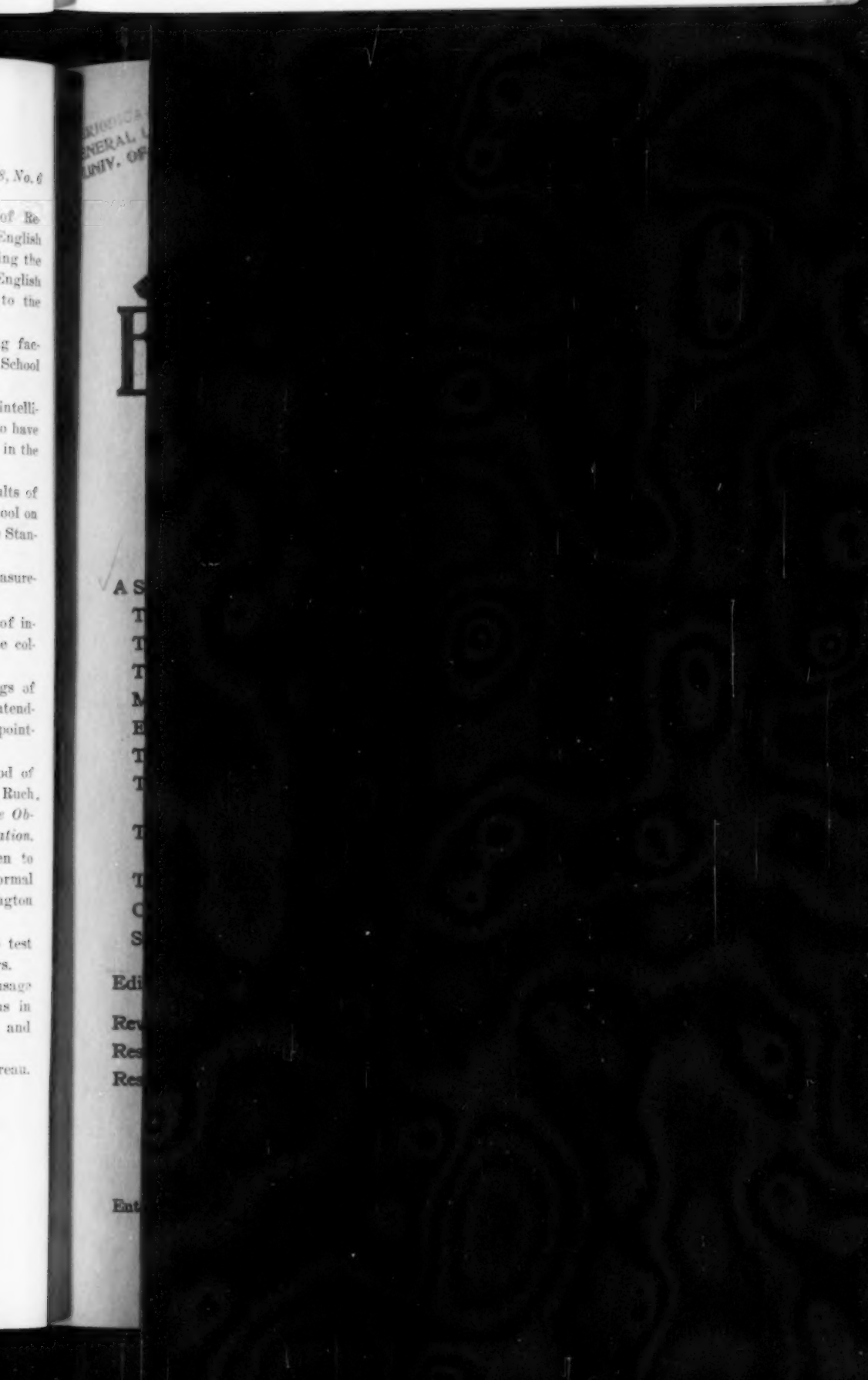
B. Studies in prediction and guidance.

1. An analysis of the scholastic records of students who received scores in the lowest sixteen percent of the Psychological Examination taken at entrance.
2. A similar study for the students who were in the highest sixteen percent. These two follow-up studies were begun in 1931. They are yielding important information to the personnel officers of the school.
3. An analysis of the results of the Bernreuter Personality Inventory in relation to success in practice teaching.
4. Prediction of failure in teaching on the basis of cumulative judgments by the faculty during the first two years.
5. The relationship between first grade reading ability as measured by the Gates Primary Reading test, and score on the Kuhlmann-Anderson intelligence test.

C. Curricular studies.

1. An analysis of the American Council Sophomore tests in relation to the course of study with a view to determining the extent to which the tests measure the objectives of courses given in the first two years. Changes in the course of study will be made in the light of this study.
2. An analysis of the errors made by eighth grade pupils in the State of Washington and by entering freshmen on the Bureau of Research entrance test in English usage with a view to adapting the course in fundamentals of English as adequately as possible to the needs of the freshmen.
3. Assignment practices among faculty of the State Normal School at Bellingham.
4. The reading ability and intelligence ratings of children who have had to repeat the first grade in the Bellingham city schools.
5. An analysis of the test results of children in the Training School on the arithmetic sections of the Stanford Achievement test.

D. Studies designed to improve measurement.

1. The skewness of the scores of informal objective tests at the college level.
2. The reliability of the ratings of teachers sent in by superintendents and principals to the Appointment Bureau.
3. The reliability of the method of test item validation given by Ruch, on page 37 of his book, *The Objective or New-Type Examination.*
4. A study of the grades given to students at the State Normal School, Bellingham, Washington (1929-1933).
5. An analysis of the objective test forms used by faculty members.
6. Construction of an English usage test with five duplicate forms in the light of the Leonard and O'Rourke studies in English.

C. C. Upshall is director of the Bureau.